FINAL
GENERAL MILLS/HENKEL CORP SUPERFUND SITE
MINNEAPOLIS, MINNESOTA

FIVE-YEAR REVIEW REPORT

December 2014

Version 01

Prepared by

Minnesota Pollution Control Agency
St. Paul, Minnesota

Sandeep Burman, Section Manager — **Date** 1/6/2015

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ACRONYMS AND ABBREVIATIONS

µg/L ..... micrograms per liter
µg/m^3 ..... micrograms per cubic meter
ADAF ..... age-dependent adjustment factor
AMR ..... Annual Monitoring Report
ARAR ..... applicable or relevant and appropriate requirement
Bay West ..... Bay West LLC
bgs ..... below ground surface
CERCLA ..... Comprehensive Environmental Response, Compensation, and Liability Act
CFR ..... Code of Federal Regulations
cm/sec ..... centimeters per second
Consent Order .. Response Order by Consent
DMR ..... discharge monitoring report
FS ..... Feasibility Study
ft ..... feet or foot
ft/ft ..... feet per foot
ft/yr ..... feet per year
FYR ..... Five-Year Review
GIS ..... geographic information system
GMI ..... General Mills Incorporated
HBV ..... Health Based Value
HRL ..... Health Risk Limit
IC ..... institutional control
IRIS ..... Integrated Risk Information System
ISV ..... intrusion screening level
lb/yr ..... pounds per year
LTM ..... long-term monitoring
MCL ..... Maximum Contaminant Level
MCLG ..... Maximum Contaminant Level Goal
MDH ..... Minnesota Department of Health
mg/kg ..... milligrams per kilogram
MPCA ..... Minnesota Pollution Control Agency
msl ..... mean sea level
NCP ..... National Oil and Hazardous Substances Pollution Contingency Plan
NPDES ..... National Pollutant Discharge Elimination System
NPL ..... National Priorities List
O&M ..... operations and maintenance
RA ..... remedial action
RAO ..... remedial action objectives
RAP ..... Remedial Action Plan
RfC ..... reference concentration
RI ..... Remedial Investigation
SECIA ..... Southeast Como Improvement Association
Site ..... General Mills/Henkel Corporation Site
SLV ..... Soil Leaching Value
SRV ..... Soil Reference Value
SWCA ..... Special Well and Boring Construction Area
TCAAP ..... Twin Cities Army Ammunition Plant
TCE ..... trichloroethylene
UECA ..... Uniform Environmental Covenants Act
USEPA ..... U.S. Environmental Protection Agency
UU/UE ..... unrestricted use/unlimited exposure
VOC ..... volatile organic compounds

EXECUTIVE SUMMARY

The Minnesota Pollution Control Agency (MPCA) has completed this Five-Year Review (FYR) of the remedial action (RA) implemented at the General Mills/Henkel Corporation (Site) located at 2010 East Hennepin Avenue, Minneapolis, Minnesota. This is the Fifth FYR Report for the Site, which evaluates the effectiveness of the RA to date.

In 1981, General Mills Incorporated (GMI) initiated an investigation into a former soil absorption pit located on the southern portion of the Site. The soil absorption pit was constructed of three stacked and perforated 55-gallon drums buried to an approximate depth of 12 feet (ft). From approximately 1947 to 1962 the soil absorption pit was utilized to dispose of an estimated 1,000 gallons of laboratory solvents per year.

In 1984, GMI and the MPCA finalized a Response Order by Consent (Consent Order), which established the RAs for groundwater at the Site. The selected remedy addressing groundwater as a drinking water resource at the Site is groundwater pump-out and treatment along with containment by means of groundwater extraction. The groundwater pump-out and treatment systems were placed into operation in late 1985.

After twenty-five years of pump-out and treatment system operation, the groundwater cleanup concentrations specified in the Consent Order were achieved. Therefore, in accordance with and MPCA-approved RA plan, the pump-out and treatment systems were shut down on September, 13, 2010. However, the groundwater pump-out wells and the monitoring well network remain in place in the event system startup is warranted. In addition, long-term monitoring and operation and maintenance are ongoing.

In summary, the groundwater remedy functioned as intended by the Consent Order and the drinking water pathway remains protective of human health and the environment. Groundwater monitoring indicates that the idled pump-out and treatment systems continue to meet the remedial action objectives (RAOs) and cleanup levels as specified in the Consent Order. However, an increase in trichloroethylene (TCE) concentrations in recent sampling events indicates an increase in contaminant concentrations may be occurring.

Several monitoring and pump-out wells appear to require more frequent maintenance. These wells are only inspected during the groundwater monitoring events (currently every five years). Consequently, annual well inspection and repair, as necessary, is recommended.

Recent concerns have been raised about the TCE concentrations in the shallow groundwater and the potential vapor intrusion pathway posed to buildings in vicinity of the Site. In accordance with Remedial Action Plan (RAP) Modification #1 to the Consent Order, investigation activities are underway to assess the TCE vapor intrusion pathway to buildings in a vapor study area established based on the known TCE impacted areas, and sub-slab vapor mitigation systems are being installed in residential buildings to address the vapor intrusion pathway. Evaluation of the vapor intrusion pathway RA plan implementation will be assessed in more detail in subsequent FYRs.

Additional detail on the FYR is provided in the FYR Summary Form on the following pages, including issues identified recommendations to address those issues, and protectiveness statements.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: General Mills/Henkel Corporation		
EPA ID: MND051441731		
Region: 5	**State:** MN	**City/County:** City of Minneapolis/Hennepin County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the site achieved construction completion?** Yes .	
REVIEW STATUS		
Lead agency: State **If "Other Federal Agency" was selected above, enter Agency name:**		
Author name (Federal or State Project Manager): David Scheer		
Author affiliation: Minnesota Pollution Control Agency .		
Review period: 4/4/2014 to 9/21/2014		
Date of site inspection: May 1, 2014		
Type of review: Policy		
Review number: 5		
Triggering action date: Proposed end date of the Fourth FYR. However, the Fourth FYR was only completed in draft form and never signed.		
Due date *(five years after triggering action date)*: Proposed end date of the draft Fourth FYR: 9/21/2009.		

Issues/Recommendations				
Issues and Recommendations Identified in the Five-Year Review:				
OU(s): Groundwater	**Issue Category:** Operation and Maintenance			
	Issue 1: The site inspection identified several wells requiring maintenance and repair.			
	Recommendation: Repair Wells			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	GMI	MPCA	2/1/2015
OU(s): Groundwater	**Issue Category:** Operation and Maintenance			
	Issue 2: Most of the wells are in high traffic areas and long-term monitoring (LTM) & operations and maintenance (O&M) of the wells every five years is not adequate to ensure compliance with the Minnesota well code.			
	Recommendation: Annual LTM and O&M are recommended.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	GMI	MPCA	4/15/2015
OU(s): Groundwater	**Issue Category:** Monitoring			
	Issue 3: LTM of groundwater every five years is not adequate to monitor compliance with RAOs and cleanup levels.			
	Recommendation: Annual LTM is recommended.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	GMI	MPCA	4/15/2015
OU(s): Groundwater	**Issue Category:** Monitoring			
	Issue 4: Groundwater monitoring network is inadequate.			
	Recommendation: Monitoring wells will be installed as part of soil gas/vapor intrusion investigation. Evaluate remedial alternatives to meet RAOs established under Issue 5.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	GMI	MPCA	4/15/2015

OU(s): Groundwater	**Issue Category:** Changed Site Conditions			
	Issue 5: Groundwater to indoor air pathway. Groundwater cleanup levels for vapor intrusion have not been established.			
	Recommendation: Develop groundwater RAOs and cleanup levels for vapor intrusion pathway.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
Yes	Yes	GMI	MPCA	11/15/2015
OU(s): Groundwater Soil	**Issue Category:** Institutional Controls			
	Issue 6: The legal description alone is not adequate to identify the "Groundwater Impacted Area" and the "Soil Impacted Area".			
	Recommendation: Create a figure with geographic information system geographic information system (GIS) coordinates. Place figure in a readily available location for potential future needs (i.e., utility locators and construction).			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	GMI	MPCA	4/15/2015
OU(s): Groundwater Soil Air	**Issue Category:** Changed Site Conditions			
	Issue 7: Human Health toxicity values for TCE have decreased.			
	Recommendation: Complete comprehensive risk assessment for all pathways.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	GMI	MPCA	7/15/2015

Protectiveness Statement(s)		
Operable Unit: Groundwater	*Protectiveness Determination:* Protective	*Addendum Due Date (if applicable):* Not Applicable
Protectiveness Statement: The groundwater remedy is protective of human health and the environment because there are no known drinking water receptors and because institutional controls are in place.		

Protectiveness Statement(s)		
Operable Unit: Soil	*Protectiveness Determination:* Protective	*Addendum Due Date (if applicable):* Not Applicable
Protectiveness Statement: The no further action remedy for the soils is protective of human health and the environment.		

Protectiveness Statement(s)		
Operable Unit: Air	*Protectiveness Determination:* Short-term Protective	*Addendum Due Date (if applicable):* Next FYR
Protectiveness Statement: A new exposure pathway (vapor intrusion) has been identified. The sub-slab soil vapor mitigation systems currently protect human health and the environment because sub-slab vapor mitigation systems are preventing vapor intrusion. However, in order for the remedy to be protective in the long-term, a Remedial Investigation (RI) and Feasibility Study (FS), including a risk evaluation for ongoing source to soil gas/air, must be completed, and RAs implemented as needed to ensure protectiveness. This exposure pathway will be evaluated at the next FYR.		

I. INTRODUCTION

This Fifth Five-Year Review (FYR) Report has been developed for the General Mills/Henkel Corporation Site (Site), located in Minneapolis, Minnesota.

I.1 The Purpose of the Review

The purpose of a FYR is to determine whether the remedy originally selected and implemented at a site continues to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports. In addition, FYR reports document issues found during the review, if any, and make recommendations on how to best address the issues.

I.2 Authority for Conducting the Five-Year Review

The Minnesota Pollution Control Agency (MPCA) prepared this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

Even though the "President" (i.e., U.S. Environmental Protection Agency [USEPA] as his or her representative) did not select a remedial action for this site, it is MPCA policy to conduct five-year reviews. The USEPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

I.3 Who Conducted the Five-Year Review

The MPCA, in consultation with the USEPA Region 5, has conducted this Fifth FYR of the remedial actions implemented at the Site. This review was conducted from April 2014 through September 2014. This report documents the results of the review conducted with the assistance of MPCA contractor, Bay West LLC (Bay West) of St. Paul, Minnesota. The MPCA is the lead environmental regulatory agency for the implementation and oversight of response actions at the Site. USEPA has not signed the Site decision documents as this Site is part of an Enforcement Deferral Pilot Project whereby MPCA leads management of the Site.

I.4 Other Review Characteristics

This is the fifth FYR for the Site. The triggering action for this policy review is the ending date of the draft Fourth FYR Report. However, the draft was never finalized. The last official signed FYR was the Third FYR Report as shown on USEPA WasteLAN database: September 21,

2004. Therefore, for the record, this Fifth FYR Report will also summarize the draft Fourth FYR Report, including:

- Actions taken since the Third FYR.
- Recommendations and follow-up actions outlined in the draft Fourth FYR and actions taken since that review.

This FYR was conducted by the MPCA following USEPA policy to review sites where remedial actions require longer than five years to achieve performance goals established for the Site or where hazardous substances remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

Table 1 identifies the Site Chronology for this FYR, starting in 1981 and up through the start of the review period of April 21, 2014. With exception of the May 23, 2014 Disposal Area Investigation Results (Barr, 2014b), documents submitted during this review period were not included in the review.

Table 1: Chronology of Site Events

Event	Date
Initial discovery of problem or contamination; investigation performed by General Mills Incorporated (GMI);	1981
Pre-National Priorities List (NPL) response: General Mills installed 27 monitoring wells.	1982-1984
Remedial Investigation/Feasibility (RI/FS) Study complete: GMI completed “Summary of Remedial Actions”	1983
NPL listing	September 21, 1984
Response Order by Consent (Consent Order) for the Site is finalized establishing the Remedial Action (RA) for the Site as “Groundwater Pump-out Systems”	October 23, 1984
Six groundwater containment wells were installed	1985
Containment wells began operation/begin pump-out & treatment/construction completion date	November/December 1985
Two additional containment wells were installed Additional RA construction completion date/	August 1992
First FYR Report	September 1994
Second FYR Report	September 23, 1999
GMI completed additional soil assessment at the soil absorption pit	May 2001
USEPA Addendum to Second FYR Report	October 24, 2001
Third FYR Report	September 2004
Site Soil and Groundwater Restrictive Covenant signed by MPCA and BBD Holdings, property owner of record at that time, on September 23, 2004, and recorded in Hennepin County on November 11, 2004	November 11, 2004
Draft Fourth FYR Report (not-finalized or signed)	September 21, 2009
Continued operation, maintenance, and monitoring of the pump-out and treatment systems.	1985 through September 13, 2010
Groundwater pump-out and treatment systems discontinued	September 13, 2010
Continued groundwater monitoring and maintenance of pump-out and treatment systems.	September 13, 2010 through present
Vapor intrusion investigation and mitigation activities	2012 through present
GMI conducted soil gas survey	April 2012
MPCA and Minnesota Department of Health (MDH) issued notification to tenants, residents, and property owners of vapor intrusion risks	November 6, 2013
Remedial Action Plan (RAP) Modification #1 to the Consent Order for vapor intrusion	March 11, 2014
GMI completed additional soil assessment at the soil absorption pit	May 23, 2014

III. BACKGROUND

III.1 Physical Characteristics

The Site is located at 2010 East Hennepin Avenue in Minneapolis, Minnesota (**Appendix A, Figure 1**). The Site is approximately 7 acres in size and was originally owned by GMI and utilized as a food and chemical research facility from 1930 through 1977. The property was purchased by the Henkel Corporation in 1977 and later by BDD Holding in 1989 and First & First LLC in 2012.

III.2 Land and Resource Use

The Site has historically been used for industrial purposes and is currently zoned as industrial, as shown in **Figure 2**. Nearly the entire Site is covered either by paved surface or buildings. The Site is currently occupied by various businesses.

Figure 2 also presents the zoning of the surrounding area. The land use to the north of the Site is primarily industrial and commercial. The land use directly east and south of the Site is residential, while the west side is bordered by railroad and beyond that by additional residential property. Approximately 5,000 people live within 1 mile of the Site.

Currently the Site and all of the properties in the area are connected to the Minneapolis municipal water supply. Water for the municipal system is obtained from the Mississippi River north of the city, upstream of the Site.

III.3 History of Contamination

The Site was primarily utilized as a technical research facility from 1930 until 1977. GMI primarily conducted food research at the Site from 1930 to 1947. In 1947, GMI began chemical research at the Site. From approximately 1947 through 1962, a soil absorption pit was utilized to dispose of laboratory solvents. The absorption pit located in the southeastern area of the Site was constructed of three, perforated, 55-gallon drums, stacked and buried to a depth of approximately 12 feet (ft) below ground surface (bgs). it was estimated that 1,000 gallons of laboratory solvent were disposed of in the absorption pit each year during its operation.

GMI notified the MPCA of the soil absorption pit location and the approximate disposal volumes at the Site on or about June 12, 1981. Since 1981, GMI has continued operation, maintenance, and investigation with regards to soil and groundwater contamination at and downgradient of the Site.

III.4 Initial Response

In 1981, GMI conducted a subsurface investigation at the former soil absorption pit. The 1981 investigation and a subsequent investigation in 1983 identified volatile organic compound (VOC)-impacted soil and groundwater in the area of the former absorption pit.

From 1982 through 1984, 27 monitoring wells were installed at and near the Site. Laboratory analysis of groundwater samples collected indicated that VOCs were present in the glacial drift aquifer, the Platteville Formation, St. Peter Sandstone, and the Prairie du Chien Group. The predominant VOC detected was trichloroethene (trichloroethylene; TCE).

III.5 Basis for Taking Action

The initial investigations identified VOC contaminants in the soil and groundwater at the Site in the area of the former absorption pit, including TCE, benzene, toluene, xylene, methyl isobutyl ketone, ethylbenzene, methylene chloride, 1,1,1-trichloroethane, 1,1,2,2-tetrachlorothane, 1,1,2-

trichloroethane, 1,1,2,2-tetrachloroethene, and chlorobenzene. As noted in the 1984 Consent Order, "(3) "hazardous substances" as defined by Minnesota Statute § 115B.02 have been detected at the Site; (4) the migration and threatened migration of these hazardous substances into the ground water beneath the Site constitutes a "release or threat of release" as that term is defined in Minn. Stat. § 115B.02, subd. 15." (MPCA, 1984)

IV. REMEDIAL ACTIONS

Based on the findings of the initial soil and groundwater assessment, GMI analyzed different remedial alternatives in 1983 to address the Site contamination. The alternatives were presented in a document "Summary of Alternative Remedial Actions" (Barr, 1983) and are listed below:

1. No Action.
2. Excavation of contaminated soils in the vadose zone.
3. A 45-ft-diameter excavation of contaminated soils to a depth of 30 ft (vadose and saturated zone).
4. A 70-ft-diameter excavation of contaminated soils to a depth of 30 ft.
5. Venting of the vadose zone in conjunction with a groundwater pump-out system.
6. Groundwater pump-out system.
7. Slurry wall and cap.
8. Soil washing in conjunction with a groundwater pump-out system.

IV.1 Remedy Selection

The decision to use a groundwater pump-out and treatment systems was finalized on October 23, 1984, through a Consent Order between GMI and the MPCA. The Consent Order only addressed VOC contaminants found within groundwater at and downgradient of the Site.

The Consent Order indicated that initial investigations concluded that there are minimal VOC impacts present in the unsaturated soil above the drift aquifer. Further investigation conducted in 2001 confirmed this assessment (Barr, 2001). GMI received a letter from the MPCA dated September 28, 2001, indicating that “no further action is needed to remediate soils at this point in time.” (MPCA, 2001)

The RAP, included as Exhibit A to the October 23, 1984, Consent Order (MPCA, 1984), identifies the selected remedy to address VOC contaminants in groundwater at and downgradient of the Site. The RAP states the remedial action objectives (RAOs) of the selected remedy as:

> *“The purpose of Part I of this Remedial Action Plan... is to define and implement the procedures necessary for minimizing the further migration of volatile organic hydrocarbons and in particular trichloroethylene (TCE) detected near the General Mills absorption pit in the ground water in the glacial drift and the Platteville Formation, and to improve the quality of the groundwater in the glacial drift and Platteville Formation in the area of the General Mills absorption pit.”*

The RAP established that the glacial drift groundwater extraction wells were to be completed within areas where identified TCE concentrations exceeded 270 micrograms per liter (µg/L). Additionally, requirements for Carimona Member extraction wells were to be completed in areas where identified TCE concentrations exceeded 27 µg/L. Magnolia member RAs were to be evaluated if performance of the Carimona Member pump-out wells did not affect the Magnolia Member groundwater. The RAP pre-dated the establishment of a federal or state drinking water standard for TCE. Therefore, the cleanup levels were based on USEPA recommendation that cleanup levels at Superfund sites should result in a risk in the range of 10^{-4} to 10^{-6}.

The RAP further states additional RAOs as:

> *"The purpose of the groundwater monitoring program is to: (1) monitor the effectiveness of the groundwater pump-out systems; (2) define changes in the distribution of volatile organic hydrocarbon concentrations listed in Attachment C to this RAP after this RAP is implemented; and (3) determine when operation of the Pump-out system can be modified or terminated."*

IV.1.1. March 2014 Consent Order Modification

In April 2012 GMI conducted a soil gas survey in the vicinity of the Site and surrounding VOC plume which confirmed the presence of TCE in the soil gas above risk criteria established by the MPCA. The VOC groundwater contaminant plume was identified as the likely source of TCE present in the soil gas samples and the soil gas vapors pose risks of vapor intrusion into buildings in the vicinity of the Site. As a result, under the regulatory oversight of the MPCA, GMI took immediate investigative and interim response action in the area near the Site to ensure the protection of human health, welfare, and the environment (MPCA, 2014). The initial steps included identifying properties with the potential for elevated vapor intrusion risks and contracting with a vapor mitigation company to install vapor mitigation systems in these homes. Vapor intrusion investigation and mitigation has continued into 2014.

In order to address potential vapor intrusion risks associated with the VOCs the Consent Order was amended on March 11, 2014, "RAP Modification #1" (MPCA, 2014) to:

> *"affirm the investigative and interim actions that have been performed to date and to further address the potential vapor intrusion risks associated with VOC contamination from the Site; to conduct additional sampling and monitoring of soil, soil gas, and groundwater to collect data necessary to identify and evaluate response action alternatives as may be necessary to mitigate the vapor intrusion pathway and reduce VOC concentrations in soil, soil gas, and groundwater."*

The MPCA and GMI agree as follows:

> *"The purpose of the RAP Modification #1 is to implement the response actions set forth herein as necessary to address potential vapor intrusion risks associated with the volatile organic compounds listed on Attachment F due to General Mills' operation of its former facility at 2010 East Hennepin Ave. (the Site). The primary constituent of concern is trichloroethylene (TCE). The response actions to be performed by General Mills pursuant to this RAP Modification #1 shall include: 1) sub-slab sampling and mitigation of potential vapor intrusion from VOCs in the soil and groundwater due to General Mills' operations at the Site; and 2) to conduct additional sampling and monitoring of soil, soil gas, and groundwater to collect data necessary to identify and evaluate response action alternatives as may be necessary to reduce VOC concentrations in soil, soil gas and groundwater due to General Mills' operations at the Site to concentrations that adequately protect human health and the environment. "*

GMI is currently performing investigation and soil gas mitigation activities and evaluating additional response action alternatives at and in the vicinity of the Site. These actions will be evaluated under the next FYR.

IV.1.2. Other Remedial Actions

Several types of institutional controls (ICs) have been implemented for protection of public health and the environment limiting access to impacted soil and/or groundwater at the Site. These ICs are described in **Section IV.2.3**.

IV.2 Remedy Implementation

Pump-out and treatment systems were implemented in accordance with the 1984 Consent Order to reduce downgradient migration of VOC contaminants. The current system consists of seven pump-out wells, a water treatment facility, and monitoring well networks in the following geologic units: the glacial drift, the Magnolia member of the Platteville Limestone, the St. Peter Sandstone, and the Prairie du Chien/Jordan aquifer. Existing groundwater extraction wells and monitoring wells are shown in **Appendix A, Figure 1**.

Generalized geologic cross sections of the Site are included in historical data located in **Appendix B** (Barr, 2013a and Barr, 2014a). As shown in the cross-sections, there are about 50 ft of unconsolidated sediment underlying the Site. As much as 10 ft of fill and peat are present near the ground surface.

Underlying the fill and peat is about 30 to 50 ft of sand alluvium, and 0 to 10 ft of clay till at the base. The uppermost bedrock is either the Decorah Shale (0- to 5-ft-thick) or the Carimona member of the Decorah Shale confining unit (note that the Carimona member was re-assigned during this review period from the Platteville Formation and is now the lower member of the Decorah Shale confining unit) (Barr, 2013a).

Groundwater generally flows southwest toward the Mississippi River. The water table occurs at about 830 to 840 ft above mean sea level (msl) beneath the Site, and the river is at about 725 ft above msl. There are downward gradients from the glacial deposits to the St. Peter Sandstone, and because of this, the groundwater in the Carimona Member beneath the Site flows toward the northwest. Flow in the underlying Magnolia Member is to the northwest, toward the Magnolia pump-out wells (**Appendix B**; Barr, 2013a).

A data review of the treatment system, including groundwater pump-out and monitoring wells is included in **Section VI.4**. As noted in **Section II** Site Chronology, the groundwater pump-out and treatment systems were discontinued on September 13, 2010. However, the system remains in place in the event system startup is warranted.

IV.3 Institutional Controls

Institutional controls are not addressed in the Consent Order; however, ICs are in place at the Site following recommendations from the previous FYRs. Institutional controls are non-engineered instruments, such as administrative and/or legal controls that minimize the potential for exposure to contamination and protect the integrity of the remedy. Compliance with ICs is required to assure long-term protectiveness for any areas of the Site where unlimited use or unrestricted exposure (UU/UE) is not allowed. **Table 2** summarizes the Institutional Controls in place at this Site. These controls are further described in the subsequent paragraphs.

Table 2 Institutional Controls Summary Table

Media, Engineered Controls, & Areas that Do Not Support UU/UE Based on Current Conditions	IC Objective	Title of IC Instrument Implemented (note if planned)
Soil greater than 4 ft bgs	Soil Impacted Area shall be used for industrial/commercial purposes only; No disturbance or alteration that would expose or disturb the subsurface soils (>4 ft bgs)	Declaration of Restrictions and Covenants and Affidavit Concerning Real Property Contaminated with Hazardous Substances Document # 8471566 as recorded by the Hennepin County Recorder Office.

Table 2 Institutional Controls Summary Table

Media, Engineered Controls, & Areas that Do Not Support UU/UE Based on Current Conditions	IC Objective	Title of IC Instrument Implemented (note if planned)
Groundwater	No disturbance or dewatering of groundwater is to take place beneath the Groundwater Impacted Area without prior authorization from the MPCA.	Declaration of Restrictions and Covenants and Affidavit Concerning Real Property Contaminated With Hazardous Substances Document # 8471566 as recorded by the Hennepin County Recorder Office.
Groundwater	Requires notification of proposed construction of a groundwater supply well to the commissioner	Minn. Rules 4725.1820 Notification for Construction of Water Supply Wells
Groundwater	Requires notification of a proposed construction of a groundwater well to the commissioner	Minnesota Statute 103I.205 Well Construction
Groundwater	Requires MDH commissioner approval for construction and modification of wells and borings within Special Well and Boring Construction Areas (SWCAs)	Minnesota Rule 4725.3650 Special Well and Boring Construction Areas - Twin Cities Army Ammunition Plant

As noted in **Table 2**, a Declaration of Restrictions and Covenants and Affidavit Concerning Real Property Contaminated with Hazardous Substances (Restrictive Covenant) is in place for the Site. Restrictive covenants are ICs that provide access and use restrictions on specific media or areas of specific media on individual properties. Restrictive covenants are transferable and binding to present and future owners of the Site until criteria for termination of the restrictive covenant is met. Historically, Minnesota has used restrictive covenants as ICs to ensure long-term protection of health and environment at risk-based cleanup sites. All new environmental covenants must conform to the Uniform Environmental Covenants Act (UECA) effective on July 1, 2007, in order to be approved by the State. UECA was developed to provide a uniform national approach to restrictive covenants. However, existing restrictive covenants under previous law remain legally valid and no significant changes would be made to the existing restrictive covenant. Therefore, modification of the restrictive covenant to UECA standards is not recommended.

The Site Restrictive Covenant (MPCA, 2004) restricts groundwater use within an area defined as the Groundwater Impacted Area. The Groundwater Impacted Area is located in the south-eastern portion of the Site and includes the area of the former absorption pit. The Site Restrictive Covenant also defines a Soil Impacted Area in the south east portion of the Site that indicates the land use shall be used for industrial/commercial purposes only and there shall be no disturbance or alteration that would expose or disturb the subsurface soils greater than 4 ft bgs. Legal descriptions were provided for the soil and groundwater areas but figures were not available at the time of this review.

In addition to the restrictive covenant applicable to the Site, Minnesota Rules and Statues require notification to the commissioner and restrictions for placement of wells including a Special Well and Boring Construction Area (SWCA), sometimes also called a well advisory. An SWCA is a mechanism used by the MDH which informs the public of potential health risks,

provides for the construction of safe water supplies, and prevents the spread of contamination due to improper drilling of wells or borings.

MDH reviews permit applications for proposed wells located in a well advisory area to ensure that well water use is appropriate (i.e., no domestic water use from wells in contaminated aquifers) and that proper drilling and construction methods are followed.

The Site is within the SWCA for the Twin Cities Army Ammunition Plant (TCAAP) and is administered by MDH. A map of the TCAAP SWCA is included in **Appendix B**. A broader SWCA is currently being considered by the MDH. VOCs in the Hillside Sand and Prairie du Chien aquifers have been detected several miles downgradient of the TCAAP site. The TCAAP well advisory would prevent the installation of any new domestic use wells in the Hillside Sand and Prairie du Chien aquifers by licensed well drillers in the vicinity of the Site.

IV.4 System Operations/Operation and Maintenance

Although the groundwater pump-out and treatment systems remain idled, as noted in the 2009 Annual Monitoring Report (AMR; Barr, 2010), "The remediation system is nearly 20 years old, and remaining original equipment is beginning to wear, leading to slightly more maintenance each year. This is not affecting overall performance of the system." and "The air stripper media was not changed in 2009. Using past performance as a guide, it is likely that the media will need to be replaced early in 2010."

According to the 2011 AMR (Barr, 2012) maintenance of the pump-out systems in 2010 prior to shut down included the following:

- Repaired caps at wells 112 and 113 and replaced a ball valve at well 113 in January.
- Repaired flow meter and replaced gasket at well 112 in March.
- Changed the air stripper media in April and repaired leaks in the air stripper tower following media replacement.
- Cleaned flow meter at well 112 in August.

The 2011 AMR also stated that submersible pumps are being used to sample the pump-out wells during the shutdown period, so system maintenance is still necessary. Maintenance of the pump-out systems in 2010 following shut down included the following:

- Replaced the motor and cleaned the pump for well 112 in October (well 112 was not sampled in September due to the broken pump). The pump was reinstalled and well 112 was sampled in December.
- Replaced the heater in the air stripper tower in December. Well 110 was not sampled in December due a pipe break potentially caused by frozen conditions; the pipe was repaired and the well was sampled in January 2011.

The 2012 AMR (Barr, 2013a) states that "The pump-out and treatment system are idled but operational. The water appropriation and NPDES (National Pollutant Discharge Elimination System) permits have been and will continue to be retained." and "Minimal maintenance was required in 2012. A new pump motor and drop pipe section were installed in well 113, the air stripper tower heater was repaired, and the pump and drop pipe were re-installed in well 112 after being removed for work associated with the vapor intrusion investigation. The overall integrity of the pump-out and treatment systems is being maintained."

Although periodic monitoring and inspection of the pump-out stem is being conducted, in the event that the pump-out and treatment system is taken out of idled status, it is recommended

that the permits be reviewed and entire system be thoroughly inspected and repaired with upgrades as necessary.

V. PROGRESS SINCE THE LAST FYR

This section documents when follow-up actions which impact protectiveness that were noted in the previous FYR Report were implemented. Because the Fourth FYR Report was not finalized, this section will summarize the concerns from the final Third FYR Report conducted in 2004, the draft Fourth FYR Report conducted in 2009, and any additional progress since that time.

As noted in the **Section IV.1.1**, in order to address vapor intrusion concerns the Consent Order was amended on March 11, 2014, "RAP Modification #1" (MPCA, 2014). Remedial actions under the RAP Modification #1 are currently underway. Implementation of RAP Modification #1 will be evaluated under the next FYR. For reference, figures presenting building vapor mitigation status and study area sub-slab sampling results greater than 20 micrograms per cubic meter ($\mu g/m^3$) as of July 23, 2014, are included in **Appendix B**.

Issues and recommendations are outlined in **Table 3**, along with follow-up actions. Additional discussion for each item is presented after the table.

Table 3: Status of Recommendations from the 2004 and 2009 FYR for the Groundwater Operable Unit

Issue	Recommendations/ Follow-up Actions	Party Responsible	Original Milestone Date	Current Status	Completion Date (if applicable)
2004 Issues presented in 2009 Review					
1. ICs are not in Place	Finalize ICs	Landowner	June 2005	Completed	November 8, 2004
2. Performance standards must be revised	Amend the current Consent Order to establish new performance standards.	MPCA	December 2004	Considered but not implemented	
3. Maintain groundwater containment and monitoring systems (1)	Continue to operate, maintain and monitor the groundwater containment system to maintain protectiveness of human health and the environment.	GMI	None stated	Ongoing	
4. Potential Delisting of Site (1)	Recommend to the USEPA that the Site be deleted from the NPL.	MPCA	None stated	Considered but not implemented	
2009 Issues					
5. Groundwater monitoring indicates meeting established performance criteria	Shut down groundwater extraction system and implement approved groundwater monitoring and contingency plan	GMI	October 2009	Completed	September 13, 2010

Table 3: Status of Recommendations from the 2004 and 2009 FYR for the Groundwater Operable Unit

Issue	Recommendations/ Follow-up Actions	Party Responsible	Original Milestone Date	Current Status	Completion Date (if applicable)
6. Increasing concentrations in one St. Peter monitoring well	Perform non-intrusive evaluation of factors that may contribute to increasing trends at well 203	GMI	October 2009	Completed	Barr, 2012
7. AMRs do not present data for all compounds analyzed	Present data for all analyzed compounds in AMRs	GMI	February 2010	Completed	AMR (Barr, 2012; Barr, 2013a)
8. Figures included in AMRs should be updated to include the most current information	Present long-term concentration trend analysis for all wells	GMI	February 2010	Completed	AMR (Barr, 2012; 2013a)
9. Monitoring well WW is missing a lock	Secure monitoring well WW	GMI	Immediate	Completed	August 22, 2013
10. Recommend NPL Deletion	Continue to proceed with deletion of the Site from NPL	MPCA/ USEPA	October 2009	Considered but not implemented	

(1) Issues 3 and 4 from 2004 were not identified; however, recommendations were made. Therefore, issues were formulated to reflect the recommendations

Issue 1. 2004: *"Finalize the institutional controls which will consist of a restrictive covenant. The current property owner has submitted a draft restrictive covenant for MPCA review and will record the final document with Hennepin County once it is approved by MPCA. The restrictive covenant is expected to be in place by June 2005."*

2009: *A Restrictive Covenant,* [signed by the MPCA and BBD Holdings on September 23, 2004 (MPCA, 2004)] *for the Site has been finalized and recorded with Hennepin County* [on November 11, 2004]*. The restrictive covenant identifies use restrictions for identified "Soil Impacted Areas," and "Groundwater Impacted Areas." The establishment of the restrictive covenant satisfies the recommendation from the previous FYR to finalize ICs.*

Issue 2. 2004: *"Amend the current Consent Order to establish new performance standards and to clarify the objective of the remedy as plume containment. This amendment is expected to be finalized by December 2004."*

2009: *At the time of this review, the Consent Order has not been amended. The MPCA has determined the remedial objective to reduce plume migration is clearly stated in the Consent Order.*

Issue 3. 2004: *"Continue to operate, maintain and monitor the groundwater containment system to the extent necessary to maintain protectiveness of human health and the environment. The*

effectiveness of the groundwater containment system should continue to be evaluated on an annual basis in the AMR with the intent of revising the system as needed."

2009: *During this review period GMI continued operations and maintenance of the groundwater extraction wells and treatment system. GMI also continued groundwater monitoring to evaluate the effectiveness of the containment remedy and evaluate progress toward meeting performance standards for the Site.*

Issue 4. 2004: *"Recommend to EPA that the Site be deleted from the NPL once the Consent Order is amended and institutional controls are put in place."*

2009: *ICs have been implemented and address for both soil and groundwater at the Site. The MPCA has recommended the Site for deletion from the NPL prior to this review period.*

Issue 5. 2009: *"Groundwater monitoring indicates meeting established performance criteria. Recommend shutting down groundwater extraction system and implement approved groundwater monitoring and contingency plan."*

2014: The groundwater pump-out and treatment system was placed on idled status on September 13, 2010. Groundwater water monitoring is currently being conducted in accordance with the approved groundwater monitoring plan. Details on the system shutdown are presented in the *Groundwater Pump-out System Shutdown Summary Report and 2011 Annual Report* (Barr, 2012). Additional monitoring results are reported in the 2012 AMR (Barr, 2013a).

Issue 6. 2009: *"Increasing concentrations in one St. Peter monitoring well. Recommend performing non-intrusive evaluation of factors that may contribute to increasing trends at well 203.*

2014: An evaluation of well 203 was performed in *the Groundwater Pump-out System Shutdown Summary Report and 2011 Annual Report* (Barr, 2012). The TCE concentrations in samples from well 203 increased starting in about 2000, peaked in 2006 and 2007 at 40 µg/L, and have been decreasing since. The sample from well 203 from September 2010 contained 21 µg/L TCE. Based on the low concentrations, no further action is an appropriate response (Barr, 2012).

Issue 7. 2009: *"AMRs do not present data for all compounds analyzed. Recommend presenting data for all analyzed compounds in AMRs".*

2014: The 2011 and 2012 AMRs include laboratory reports identifying all analysis performed. However, a summary of all the compounds detected were not presented in figures. Recommend tabulating and presenting historical data for all detected compounds to be included in the AMRs.

Issue 8. 2009: *"Figures included in AMRs should be updated to include the most current information. Recommend presenting long-term concentration trend analysis for all wells."*

2014: The 2011 and 2012 AMRs include graphs, tables and figures containing the most current information. Graphs and tables containing historical and current information for groundwater levels and TCE fluctuations were also presented. Long-term trend analysis (i.e., such as a statistical analysis - Mann-Kendall Trend analysis) was not performed. Recommend trend analysis be performed.

Issue 9. 2009: *"Monitoring well WW is missing a lock. Secure monitoring well WW."*

2014: No records were found regarding placement of the WW lock. However, WW was abandoned on August 22, 2013 (Barr, 2014).

Issue 10. 2009: *"Recommend NPL Deletion; Continue to proceed with deletion of the Site from NPL."*

2014: Deletion from the NPL was not implemented. As noted in Section IV.1.1, under the March 11, 2014, "RAP Modification #1" (MPCA, 2014), GMI is currently performing investigation and soil gas mitigation activities at and in the vicinity of the Site to address potential vapor intrusion risks associated with the VOCs in the groundwater.

VI. FIVE-YEAR REVIEW PROCESS

This section describes the activities performed during the FYR process and summarizes the findings where appropriate.

VI.1 Administrative Components

On April 4, 2014, MPCA initiated the Fifth FYR process. The Site FYR was led by David Scheer, Senior Hydrologist of the MPCA's Remediation Division. Leah Evison and Jennifer Cheever, of the USEPA assisted in the review as the representative of the support agency. In addition, GMI representative Larry Deeney, landowners in vapor study area, and the Southeast Como Improvement Association (SECIA) were contacted on April, 25, 2014, to notify them of the upcoming FYR, establish members of the review team, and develop a review schedule.

The review consisted of the following components:

- Community Involvement;
- Document Review;
- Data Review;
- Site Inspection; and
- FYR Report Development.

VI.2 Community Notification and Involvement

Activities to involve the community in the FYR process were initiated with notifying SECIA and inviting SECIA representatives to the May 1, 2014, Site Inspection. A notice was published in the following websites and local newspapers stating that there was a FYR and inviting the public to submit any comments to the MPCA:

- MPCA Website;
- SECIA Website;
- Minneapolis Star Tribune; and
- Minnesota Daily.

A copy of each notification is included in **Appendix C**. The public comment period ended on July 7, 2014. The comments and concerns received, along with MPCA responses, are included in **Appendix C.**

Comments were received from:

SECIA: Comments received from the SECIA include a "Removal Request" for soil excavation to be performed in the former absorption pit area. In an MPCA response letter, the MPCA summarizes historical (Barr, 2001) sampling events, which did not find TCE soil contamination that justified soil removal. In addition, more recent sampling (Barr, 2014a) found no TCE contamination in the upper 30 ft within the former absorption pit. The MPCA concluded that excavation of the former soil absorption pit area would not provide an overall environmental benefit or health risk reduction to residents.

Judith Treise: This resident expressed her overall concern that the Site has been neglected and a failure of government to do its job.

Additional community notification and involvement activities are currently being performed as part of the soil gas investigation and sub-slab mitigation activities.

A draft copy of the FYR was provided to USEPA, SECIA and GMI for review and comment. Comments were received from GMI. The GMI letter and MPCA response are included in **Appendix C.** In response to the comments, clarifying statements were added to the FYR text, as appropriate.

VI.3 Document Review

A list of documents reviewed for the preparation of this FYR is included in **Appendix D.** The Consent Order, previous FYR reports, and Annual Long-Term Monitoring (LTM) Reports since the last FYR were the primary documents reviewed. RAOs, applicable or relevant and appropriate requirements (ARARs) and cleanup levels used to ensure the groundwater remedy is protective of human health and the environment were obtained from the 1984 Consent Order. A Decision Document/Record of Decision has not been completed for this Site. The Consent Order did not included ARARs for groundwater as they were not established in 1984.

VI.4 Data Review

This section presents a summary of the documents and data reviewed in preparation of this FYR. AMRs submitted during the review period include:

- 2009 AMR (Barr, 2010)
- 2010 AMR (Barr, 2011)
- Groundwater Pump-out System Shutdown Summary Report And 2011 Annual Report (Barr, 2012)
- 2012 AMR (Barr, 2013a)
- 2013 AMR (Barr, 2014a)

In addition, the *Draft Vapor Intrusion Pathway Investigation and Feasibility Study Work Plan Sampling and Monitoring Work Plan*, June (Barr, 2014b) contained updated information on geology and recent groundwater monitoring results. A summary of these reports are discussed in the following subsections. Supporting tables and figure are included in **Appendix B.**

VI.4.1. Groundwater Extraction and Pump-Out System Monitoring

The groundwater pump-out and treatment systems operated at the Site for over 25 years. Five pump-out wells (109, 110, 111, 112, and 113) are screened in the glacial drift. Wells 109 and 110 are located nearest to the former absorption pit area and comprise the on-site glacial drift pump-out system. The downgradient glacial drift pump-out system consists of wells 111, 112, and 113. Two pump-out wells (MG1 and MG2) are screened in the Magnolia member of the Platteville bedrock formation. When the pump-out system is operational, water from wells 109 and 110 is treated by the on-site air stripper prior to discharge to the storm sewer, and water from the remaining five pump-out wells discharges directly to the storm sewer. (Barr, 2012)

The pump-out system removed approximately 6.6 billion gallons of groundwater and removed approximately 7,000 pounds (570 gallons) of TCE from the groundwater during 25 years of operation. Annual TCE removal peaked at 660 pounds per year in 1987, and decreased exponentially to a near-constant average of 150 pounds per year from 2006 to 2010. (Barr, 2012)

In accordance with the Consent Order, the pump-out systems were designed as follows:

- The on-site glacial drift pump-out system was designed to remove groundwater with the highest TCE concentrations in the glacial drift.
- The downgradient glacial drift pump-out system was designed to remove groundwater in the glacial drift with TCE concentrations greater than 270 µg/L.
- The Magnolia pump-out system was designed to remove groundwater in the Carimona and Magnolia members with TCE concentrations greater than 27 µg/L.

GMI and Barr met with the MPCA on June 23, 2010 regarding GMI's desire to seek the delisting of the Site from the Minnesota PLP and achieve closure. MPCA suggested shutting down the groundwater pump-out systems for a period of approximately one year and evaluating groundwater conditions. The pump-out systems were shut down on September, 13, 2010, in accordance with an MPCA approved plan. A comprehensive pump-out system shut down report was prepared in conjunction with the 2011 AMR (Barr, 2012) that detailed the events and monitoring results.

The 2013 AMR indicated that "The groundwater pump-out and treatment systems remained shut down in 2013. Submittal of quarterly "No Discharge" Discharge Monitoring Reports (DMRs) continued in 2013 under the National Pollutant Discharge Elimination System (NPDES) permit for the Site (MN0056022). The Minnesota Department of Natural Resources water appropriations permit is being maintained while the groundwater pump-out system is idle" (2014a, Barr).

Generally, groundwater flow direction has reverted to pre-1985 conditions following the shutdown. The exception is the Carimona member, where the flow pattern remains similar to what it was during the years of pumping. TCE concentrations in the glacial drift and Magnolia member pump-out wells decreased approximately 70 to 80% since the pump-out and treatment system began operation until the shutdown. The treatment system worked most effectively in the first three to five years of operation and significantly reduced TCE concentrations in the pump-out wells (Barr, 2012).

The pump-out and treatment systems are idled but remain operational. Currently, the long-term operation and monitoring plan includes the collection and analysis of samples from selected monitoring and pump-out wells once every five years. The recommended monitoring plan is summarized in **Appendix B**, labeled Table 3 (Barr, 2012).

VI.4.2. Surface Water

The Mississippi River is located approximately 1 mile southwest of the Site. The Mississippi River surface water is a Class 2 water, which is defined as:

- Class 2 waters, aquatic life and recreation. Aquatic life and recreation includes all waters of the state that support or may support fish, other aquatic life, bathing, boating, or other recreational purposes and for which quality control is or may be necessary to protect aquatic or terrestrial life or their habitats or the public health, safety, or welfare (MPCA, 2010).
- This class of surface water is also protected as a source of drinking water and the applicable standard for TCE is 25 µg/L (MPCA, 2010).

As shown in the historical documents included in **Appendix B**, the glacial drift and St Peter aquifers flow to the southwest, towards the Mississippi River, while the Carimona aquifer has a northwesterly flow direction. The October 2, 2014, Figure and accompanying Table in **Appendix B** present historical groundwater quality results, which indicate that the TCE contaminant plume in the glacial drift aquifer has not migrated to the Mississippi River. The St Peter Sandstone and

Prairie du Chien/Jordan groundwater quality results from December 2012 indicate concentrations are below surface water standards (well 203; 19 µg/L) approximately ¾ mile from the river.

VI.4.3. Groundwater Monitoring

The existing monitoring well network and Site layout are shown on **Figure 1.** In addition to the seven pump-out wells, the existing monitoring well network includes 23 wells (7 of which are pump-out wells) screened in the following geologic units: the glacial drift, the Carimona member of the Decorah Shale, the Magnolia member of the Platteville Limestone, the St. Peter Sandstone, and the Prairie du Chien Group. Over time, as the extent of impact was determined, and as the effectiveness of the pump-out systems was verified, the monitoring well network was reduced, including abandonment of 11 groundwater wells in August 2013 (Barr, 2014a) and all but 16 remaining monitoring wells have been abandoned. A complete list of existing and abandoned wells is included in **Appendix B**.

Historical groundwater trends and TCE results (Barr, 2013a and 2014a) are included in tables and graphs in **Appendix B.** Groundwater levels in all aquifers measured during the 2012 groundwater monitoring event were consistent with historic data and trends. Groundwater flow directions in the monitored aquifers are consistent with historical results. The lateral flow direction in the Carimona confining unit changed in the late 1980s in response to pumping and, as of the groundwater monitoring event conducted in December 2012, the flow direction remained consistent with the direction measured in the pumping period and has not yet reverted to the pre-pumping condition. As the Carimona is a confining unit, groundwater flow likely has a strong vertical component and the lateral flow is less important than in the other units being measured (Barr, 2013a).

The average depth to groundwater is approximately 15 to 25 ft bgs, with an approximate saturated thickness of the glacial drift of 20 to 25 ft. Water table contours as measured in April 2014 are shown in **Appendix B** (labeled Figure 8). The horizontal groundwater flow direction in the glacial drift across the Site and surrounding area has been consistently southwest, based on the last 29 years of monitoring data (Barr, 2013a). Hydrographs of water-level data from the glacial drift monitoring wells show relatively stable water level trends (Barr, 2013a).

A detailed discussion of groundwater quality results for each geologic unit is provided below.

Glacial Drift Wells. TCE concentrations in the samples from the glacial drift wells during the groundwater monitoring event were below the TCE limit (270 µg/L) set forth in the Consent Order. Temporal trends in TCE concentrations in groundwater at the glacial drift wells **Appendix B** (labeled Figure 13 and 14) during the shutdown period are as follows:

- continuing non-detectable TCE concentrations in groundwater at wells 111, Q, T, and X;
- declining TCE concentrations in groundwater at well S (110 µg/L; 12/10/2009 to 73 µg/L; 12/19/2012), well V (58 µg/L; 3/3/2011 to 31 µg/L; 12/17/2012), well 112 (38 µg/L; 2/4/2010 to 5.4 µg/L; 1/16/2013), and well 113 (78 µg/L 9/22/2010 to 4.5 µg/L; 12/18/2012);
- an increase in TCE concentrations in groundwater at well 109 (120 µg/L 9/22/2010 to 160 µg/L; 12/18/2012) well W (5.2 µg/L; 6/16/2011 to 6.8 µg/L; 12/17/2012) and well 110 (100 µg/L: 9/22/1010 to 230 µg/L; 1/17/2013); however, the concentrations remain below the applicable limits in the Consent Order (Barr, 2013a).

Carimona Wells. The Carimona wells were not sampled during 2012, however temporal trends of TCE concentrations at the Carimona wells have been generally steady for many years (Barr, 2013a). As a result, MPCA approved the sealing of all Carimona monitoring wells in August

2013. TCE concentrations in the Magnolia member wells during the groundwater monitoring event were below the TCE limit (27 µg/L) set forth in the Consent Order. Temporal trends of TCE concentrations at the Magnolia wells **Appendix B** (labeled Figure 16) during the groundwater monitoring event were:

- a continuing non-detectable TCE concentration at well TT
- a continuing steady TCE concentration at well 14 (5.3 µg/L12/17/2010 to 4.2 µg/L; 12/19/2012);
- a decrease in the TCE concentration at well MG-1 (12 µg/L; 2/4/2010 to 6.5 µg/L; 12/19/2012); and
- an increase in the TCE concentration at well MG2 (2.6 µg/L; 2/4/2010 to 13 µg/L; 12/18/2012); however, the concentration remains below the applicable limit in the Consent Order (Barr, 2013a).

St. Peter Sandstone. Recent trends of steady to declining concentrations at well 200 (5.3 µg/L; 9/22/2010 to 5.3 µg/L; 12/18/20120) and well 203 (21 µg/L; 9/22/2010 to 19 µg/L; 12/18/2012) in the St. Peter Sandstone continued during the groundwater monitoring event (Barr, 2013a). **Appendix B** (labeled Figure 18).

Prairie du Chien Group. The Prairie du Chien Group is located below the St. Peter Sandstone and is separated from the glacial drift by three confining units: Glacial Till, Decorah Shale, and Glenwood Formation. In addition, the basal St. Peter is shaley and may act as an additional confining layer. Consistent TCE concentrations in the Prairie du Chien have been measured in recent years. The Prairie du Chien aquifer in this area has been impacted by TCE from the TCAAP Site in Arden Hills. Prairie du Chien monitoring was not part of the monitoring program in 2012. The Prairie du Chien well at the site is an inactive industrial production well; there are no plans for future use of this well (Barr, 2013a).

Potentiometric head differences between the glacial drift and wells finished in underlying bedrock (lower Carimona Member of the Decorah Shale) indicate that where present, the clay till and/or the upper bedrock units of the Decorah Shale act as a confining unit, restricting vertical groundwater flow between the glacial drift and lower bedrock units (Barr, 1983; Runkel et al., 2003). Hydraulic head differences between wells finished in the glacial drift and the bedrock during operation of the pump-out system indicated downward vertical hydraulic gradients between the glacial drift and the bedrock of approximately 0.3 to 0.4 ft per ft (ft/ft) (Barr, 2013a). Several measurements of the hydraulic conductivity of the glacial drift have been completed. A pumping test at pump-out well 109 on the Site indicated a hydraulic conductivity of 2×10^{-3} centimeters per second (cm/sec) (Barr, 1985). Values ranging between 2×10^{-3} to 5×10^{-2} cm/sec were estimated based on approximations using the Hazen method utilizing grain size data from borings across the Site (Barr, 1985). Based on this range, an estimated hydraulic gradient of 0.01 ft/ft from the 2014 water table contours in the glacial drift aquifer and an effective porosity estimate of 0.3, the ambient horizontal groundwater flow velocity is estimated between 70 and 2,000 ft per year (ft/yr). (Barr 2014b)

VI.4.4. Soil

Several soil investigations have been performed in the former soil absorption pit area. The two most recent investigations are summarized in the 2001 report (Barr, 2001) and Disposal Area Investigation Results (Barr, 2014b). Figures were developed and presented in the *Draft Vapor Intrusion Pathway Investigation and Feasibility Study Work Plan* (2014 Work Plan; Barr, 2014c) and are included in **Appendix B**. The figure labeled Figure 15 presents a compilation of historical boring locations. The 2001 investigation work was performed to better characterize the

possible existence of contaminant in the soil within the accessible (0-4 ft bgs) and potentially accessible zones (5-12 ft bgs) in the absorption pit area. All soils were field screened for volatile organic vapors and 30 soil samples were selected for laboratory analysis. TCE was not detected above the Tier 2 Soil Reference Value (SRV) (46 milligrams per kilogram [mg/kg]) in the 30 soil samples analyzed. TCE was not detected above the Tier 1 Soil Leaching Values (SLVs) (0.14 mg/kg) in GP-1, the boring advanced nearest to the former absorption pit.

The Disposal Area Investigation Results (Barr, 2014b) summarized the results of four soil borings (DP-054 through DP-057) advanced in May of 2014 to verify whether TCE contamination is present in the soil. The four boring locations are shown on a figure in **Appendix B** (labeled Figure 1). Boring DP-054 was placed as close as possible to the location of the former soil absorption pit area based on the presence of buried utilities. Borings DP-055, DP-056 and DP-057 were then placed 30 to 40 ft west, east and south of the soil absorption pit area, respectively. The stratigraphy observed in the soil borings generally consisted of 10 to 16 ft of topsoil and peat fill at the surface, underlain by sand with occasional gravel lenses. The presence of peat fill indicates that this area may have been excavated in the past. Clay till was encountered in each of the general drilling locations beginning between 39 and 42 ft bgs at elevations ranging from 816.5 to 819.5 ft above msl. This investigation did not find TCE contamination in soil samples collected in the shallow depths (upper 30 ft) of the former soil absorption pit area. Low level TCE (less than 1 mg/kg) was found in the soil at depths between approximately 40 and 53 ft bgs in the former soil absorption pit area (Barr, 2014b).

VI.4.5. Vapor Intrusion Pathway

In accordance with the RA Modification #1, a vapor intrusion pathway investigation and sub-slab soil gas mitigation system activities have been ongoing since April 2012. Although review of these activities will be conducted during the next FYR, data generated was used in the evaluation of the groundwater remedy. This data along with plans for proposed Site investigation activities, are presented in the 2014 Work Plan (Barr, 2014c). Copies of updated tables and figures, including geologic maps, cross sections, and existing and abandoned wells from the this work plan are included in **Appendix B**. Proposed work includes the installation of 26 additional glacial drift groundwater monitoring wells to add to the 13 existing glacial drift monitoring and pump-out wells. These wells are identified in **Appendix B** (labeled Table 2) and include one nested well in the former absorption pit area (labeled Figure 15).

VI.4.6. Receptor Well Survey

The Consent Order indicates five industrial wells in the area were sampled as part of the initial investigation. Sampling results indicated that VOC concentrations were not detected in four of the five wells sampled and concentrations detected in the fifth well were below drinking water quality criteria. A receptor survey conducted in 1997 identified 21 wells (not including Site associated wells) downgradient of the Site, in the area between the Site and the Mississippi River (approximately 1 mile). Evaluation of the downgradient wells concluded 18 of the 21 wells were either abandoned or not in service. Two of the three remaining wells were utilized by the University of Minnesota for dewatering purposes near an underground structure. The third well was also utilized by the University of Minnesota for a source of water for a deionization process and is not connected to the buildings potable water supply system. Potable use of groundwater downgradient of the Site has not been identified.

Another receptor survey was completed and reported in the 2012 Receptor Survey. In summary, wells listed as “active” that were found in the 2012 Receptor Well Survey are either used for dewatering purposes or are not connected to potable water supply services. Therefore, these wells do not pose a risk to human health or safety. The 2012 search area used was the same as in 1997 (Barr, 2013a).

VI.5 Site Inspection

On May 1, 2014, a Site inspection was conducted with representatives from MPCA, USEPA, GMI, Barr, Bay West, landowner, and SECIA. A site inspection summary form along with a sign in sheet identifying the inspection participants is included in **Appendix E**. The purpose of the inspection was to assess the protectiveness of the remedy. The overall observations from the site inspection include:

- The groundwater remedy was designed to contain the contaminant plume. The pump-out and treatment systems were shut down in 2010. According to Barr, at the time of the inspection, periodic groundwater monitoring indicates the groundwater plume remains stable/receding and contaminant concentrations are largely declining. Institutional controls are in place that restrict disturbance of soils below 4 ft in the vicinity of the former adsorption pit and installation of groundwater drinking water wells in the affected aquifers. Therefore, the groundwater remedy met the criteria presented in the Consent Order and is not operating at present.
- All existing pump-out and monitoring wells were located (**Figure 1**) and inspected. Representative photographs were taken of each well and are included on **Figures 3A** and **3B.** A well inventory sheet listing all existing wells is included in **Appendix E**. As noted in the well inventory form, several wells require maintenance. These wells are only inspected during the groundwater monitoring event (currently every five years). Annual well inspection and repair, as necessary, is recommended.
- The groundwater LTM program calls for sampling of existing monitoring well network every five years as approved by the MPCA. Vapor intrusion assessment activities should evaluate whether pump-out and treatment system or other actions will enhance existing vapor mitigation activities.

VI.6 Interviews

During the FYR process, interviews were conducted with several stakeholders and government officials involved in Site activities and/or that are aware of the Site. The purpose of the interviews was to document the opinions on perceived problems or successes with the remedy that have been implemented to date. A list of individual contacted and interviewed are included in **Appendix F** along with a detailed summary of the interviews.

The overall general sentiment is that the project was moving along smoothly until the potential risk from the vapor intrusion pathway came to light. As a result, there is concern that the groundwater plume needs further delineation to aid in the evaluation of the vapor intrusion pathway.

VII. TECHNICAL ASSESSMENT

VII.1 Question A: Is the remedy functioning as intended by the decision documents?

VII.1.1. Remedial Action Performance

The pump-out and treatment systems were shut down on September, 13, 2010, in accordance with an MPCA-approved plan, after 25 years of operation. The pump-out and treatment systems removed approximately 6.6 billion gallons of groundwater and removed approximately 7,000 pounds (570 gallons) of TCE from the groundwater during 25 years of operation. Annual TCE removal peaked at 660 pounds per year (lb/yr) in 1987, and decreased exponentially to a near-constant average of 150 lb/yr from 2006 to 2010. (Barr, 2012)

Groundwater monitoring indicates that the idled pump-out and treatment systems continue to meet the RAOs and cleanup levels as specified in the Consent Order:

- The on-site glacial drift pump-out system was designed to remove groundwater with the highest TCE concentrations in the glacial drift.
- The downgradient glacial drift pump-out system was designed to remove groundwater in the glacial drift with TCE concentrations greater than 270 µg/L. The most recent sampling event indicated the highest concentrations have been detected at well 110 (230 µg/L; 1/17/2013).
- The Magnolia pump-out system was designed to remove groundwater in the Carimona and Magnolia members with TCE concentrations greater than 27 µg/L. The most recent sampling event indicated the highest concentrations have been detected at well MG2 (13 µg/L; 12/18/2012).

However, an increase in TCE concentrations in recent sampling events indicates an increase in contaminant concentrations may be occurring in some areas.

VII.1.2. System Operations/O&M

As noted in the well inventory form (**Appendix F**), several monitoring and pump-out wells require maintenance. These wells are only inspected during the groundwater monitoring event (currently every five years).

The pump-out and treatment system are idled but operational. The water appropriation and NPDES permits have been and will continue to be retained. The overall integrity of the pump-out and treatment systems is being maintained (Barr, 2013a).

VII.1.3. Opportunities for Optimization

Annual well inspection and repair, as necessary, is recommended. Although periodic monitoring, inspection and repair of the pump-out and treatment systems are being conducted (currently proposed for every five years), in the event that the pump-out and treatment systems are taken out of idled status, it is recommended that the entire system be thoroughly inspected and repaired with upgrades as necessary.

GMI is currently performing investigation and soil gas mitigation activities at and in the vicinity of the Site to address potential vapor intrusion risks associated with the VOCs in the groundwater. Because soil gas mitigation activities are needed to address the potential vapor intrusion risks associated groundwater RAOs and cleanup levels presented in the Consent Order should be evaluated for this pathway.

VII.1.4. Early Indicators of Potential Issues

Review of TCE results (see tables and graphs in **Appendix B**) indicate an increase in contaminant concentrations in some of the wells including the source area glacial drift pump-out wells 109 and 110 since system shutdown. Although levels are still below the Consent Order action levels of 270 µg/L, concentrations at pump-out well 110 have more than doubled from 100 µg/L on September 22, 2010, to 230 µg/L on January 17, 2013, since the pump-out system was shut down, indicating an increase in contaminant concentrations may be occurring. Therefore, groundwater monitoring more frequently than once every five years, as proposed in the AMR, is recommended until TCE results exhibit a stable or receding plume. In addition, a statistical analysis (e.g. Mann-Kendall Trend analysis) is recommended to support statements concerning increases, decreases, or stable concentrations over time.

The recent Draft Vapor Intrusion Pathway Investigation and Feasibility Study Work Plan proposes installing 26 additional glacial drift monitoring wells including one nested well in the former absorption pit area (**Appendix B**, Figure 15; Barr, 2014c) to augment the 13 existing glacial drift monitoring and pump-out wells. Available data suggest that the former soil absorption pit is not a continuing source of TCE in shallow groundwater. However, vertical characterization of deeper (greater than 15 ft bgs) soil and groundwater is recommended

VII.1.5. Implementation of Institutional Controls and Other Measures

The property is surrounded by an unsecured fence and the landowner is aware of the ICs; there are no access restrictions in place or other physical measures indicating the outline of the Soil Impacted Area. In addition, figures depicting the restricted areas were not available in the copy of the IC on file at the MPCA. The legal description alone is not adequate to identify:

- Groundwater Impacted Area located in the south eastern portion of the Site and includes the area of the former absorption pit; and
- Soil Impacted Area in the south east portion of the Site.

A figure with geographic information system (GIS) coordinates should be developed and readily available in the event that construction within the impacted areas is proposed.

VII.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

VII.2.1. Changes and Standards To Be Considered

No changes in the federal standards were identified in this five-year period. Drinking water standards were not established at the time the Consent Order; therefore, they are not identified as an ARAR. However, the current, drinking water standard (Maximum Contaminant Level [MCL]) for TCE is 5 µg/L. The MDH established Health Risk Limit (HRL) for TCE is 5 µg/L, which is consistent with the federal MCL for this compound. In May of 2013, MDH developed health based values (HBVs) for TCE including cancer (2 µg/L), short-term (0.4 µg/L), chronic (0.4 µg/L) and subchronic (0.4 µg/L). Remedial actions at the site had previously focused on the use of groundwater, and through the imposition of ICs, groundwater use is no longer a concern.

Recent concerns have been raised about the TCE concentrations in the shallow groundwater and the potential vapor intrusion pathway posed to buildings in the vicinity of the Site. In assessing this exposure pathway, MDH and MPCA have established a residential Intrusion Screening Value (ISV) of 2 µg/m^3 of TCE in indoor air. This level is “considered safe to breathe every day for a lifetime, even for potentially sensitive populations, such as young children or

pregnant women" (MDH, 2014). An industrial ISV of 6 µg/m^3 has also been established by the MPCA for TCE. Both the residential and industrial ISVs can be considered "To Be Considered values." The residential and industrial ISVs were revised to their current numbers based on toxicity data released by EPA's Integrated Risk Information System (IRIS) in September of 2011. As noted previously, the vapor intrusion pathway is being addressed through RAP Modification #1 to the Consent Order and will be assessed in more detail in the next FYR.

VII.2.2. Changes in Exposure Pathways

Groundwater

The focus of the initial remedial action was the control of risks that might result from the use of groundwater as a source of drinking water. The cancer risk value for TCE in effect in 1984 resulted in a 10^{-6} (one-in-one million) cancer risk at a concentration in drinking water of 2.7 µg/L. USEPA suggested that cleanup at Superfund sites should result in a risk in the range of 10^{-4} to 10^{-6}, or drinking water levels between 270 µg/L and 2.7 µg/L, and it seems likely that the target risk levels of 270 µg/L for shallow aquifers and 27 µg/L for deeper aquifers at the Site were based on these values. The differences between the target risk levels for the two aquifers reflects the fact that the deeper aquifer is more likely to be used as a source of potable water, and consequently, a lower target risk level would be warranted for this aquifer.

Groundwater is no longer considered to be a source of potable water and ICs are in place to ensure that such use does not occur. Therefore, with the implementation of the ICs, the regular use of groundwater as a source of potable water is no longer an exposure pathway at the site.

Vapor Intrusion

The potential for constituents in groundwater to migrate through vadose zone soils and enter the indoor air of buildings is termed vapor intrusion. For the Site, the presence of TCE in shallow groundwater and the location of the Site in a residential area have resulted in vapor intrusion pathway being recognized as a concern. As a result, recent investigation and remedial activities at the Site, addressed in RAP Modification #1 to the Consent Order, have shifted from concerns about the potential use of groundwater as a source of potable water to a focus on the potential for exposure via vapor intrusion and the inhalation pathway. The residential ISV of 2 µg/m^3 discussed above is multiplied by a default attenuation factor of 10 to arrive at an equivalent screening value for sub-slab (samples collected beneath the floor of the building) soil gas of 20 µg/m^3. Concentrations exceeding the MDH and MPCA residential screening level for TCE in soil gas of 20 µg/m^3 have been found and mitigation systems have been installed at many properties in the neighborhood near the Site.

Air

In the past, an air stripper was used to remove TCE and other VOCs from groundwater that was pumped from glacial drift aquifer extraction wells at the Site, piped to the former GM facility, and passed through the air stripper to remove VOCs. Over 95% removal efficiency was typically achieved, and the VOCs removed were exhausted into the air through an exhaust stack near the former GM facility. Substantial dilution typically occurs quickly for constituents released into outdoor air, particularly when released via a stack located at least 25 ft high (as required in the Consent Order) and this pathway generally had not been considered to contribute substantially to health risks near a site. The air stripper is no longer in use at the site, and consequently exposure via this pathway no longer occurs. If future plans include the reuse of this stripper, emission modeling and exposure and risk evaluation would be warranted.

Soil

According to the most recent investigation in the former soil absorption pit area (Barr, 2014b) TCE contamination was not detected in soil samples collected in the shallow depths (upper 30 ft) in this area. Low level TCE (less than 1 mg/kg) was found in the soil at depths between approximately 40 and 53 ft bgs in the former soil absorption pit area (Barr, 2014b). Consequently, the potential for contact with TCE and VOCs in soil has been, and remains, limited and as a result the potential for exposure and risks is very low. In addition, land use restrictions are in place to ensure that any future activities at the site (such as future subsurface construction) do not inadvertently result in exposure to VOCs in soil.

VII.2.3. Changes in Toxicity and Other Contaminant Characteristics

Toxicity – Non-cancer effects

TCE had primarily been considered a central nervous system depressant following acute or chronic exposure by both ingestion and inhalation. Industrial use of TCE also resulted in dermatitis from exposure to vapors of concentrated solvent. More recently, concern has focused on kidney toxicity and effects on the developing fetus. In 2011, USEPA released revised toxicity factors for TCE based on years of review of toxicity studies. The information is provided online on the USEPA (2011) IRIS database. In summary, the value is greater than the drinking water standard MCL for TCE of 5 µg/L, indicating that the non-cancer risk is not the basis for the MCL.

USEPA also established an inhalation reference concentration (RfC) for TCE of 2 $\mu g/m^3$, with this value based on cardiac malformations in the developing fetus, and on immune system effects. The potential for effects on the developing fetus is of particular concern, as effects would be associated with a short duration of exposure (i.e., during the period when the heart is developing in the fetus). This new inhalation reference concentration was used by MDH in establishing the ISV for inhalation exposure to TCE that is the primary concern for the vapor intrusion pathway.

Cancer Risk

USEPA (2011) has updated its IRIS database on the carcinogenicity of TCE as well. TCE has been classified by USEPA as “carcinogenic to humans” based on convincing epidemiological evidence of a causal association between TCE exposure and kidney cancer, less convincing evidence of other cancer is humans, and supporting evidence from studies in animals. Target drinking water levels based on risk would need to be modified accordingly.

USEPA (1994) had derived a cancer slope factor of $6x10^{-3}$ $(mg/kg/day)^{-1}$ for inhalation exposure to TCE. More recently, USEPA has provided cancer risk values for inhalation risk in terms of a unit risk, risk associated with a unit amount of the carcinogen in air. USEPA (2011) has updated this value to a unit risk value is 4×10^{-5} $(\mu g/m^3)^{-1}$ or an increase of 24-fold. This updated unit risk

value equates to continuous lifetime exposure to air at 0.025 µg/m^3 of TCE resulting in a 10^{-6} risk level. The updated cancer risk values will have only a limited effect on site risks as exposure via ingestion of either soil or groundwater is not expected to occur and the ISV for noncancer endpoints is considered by MDH to be protective for cancer.

VII.2.4. Changes in Risk Assessment Methods

In 2005, USEPA determined that for certain carcinogens that were mutagenic, there was an increased susceptibility in early life. For such carcinogens, USEPA (2005) determined that an Age-Dependent Adjustment Factor (ADAF) should be added to account for this increased susceptibility. For TCE, USEPA was somewhat equivocal on the use of this factor but did note that use of the ADAF became increasingly important as the proportion of exposure during early life increased. The ADAFs recommended by USEPA are 10 for exposure at less than 3 years old and 3 for 3 years old to 16 years old, with no adjustment after that age.

MDH accepts the use of ADAFs but the use ADAFs are likely to have only a limited effect on risk-based target concentrations. As previously noted, exposure via soil or groundwater ingestion is not expected and the use of ADAFs will therefore not affect site risks for these pathways. Also as noted previously, the ISV for noncancer endpoints is considered by MDH to be protective for cancer, including lifetime exposure to sensitive populations such as children (MDH Trichloroethylene: Chronic Health-Based Value for Air December 31, 2013).

VII.2.5. Expected Progress Towards Meeting RAOs

The primary RAOs for this site (as noted in Section IV.1) are the containment of VOCs that exceed the cleanup levels of the Consent Order and in particular TCE (i.e., the minimization of the further spread of VOCs in groundwater) and a decrease in the concentration of these constituents in groundwater over time. The remedial action at the Site (groundwater pump-out and treatment) achieved the Consent Order RAOs and cleanup levels and is currently in idled status. LTM is ongoing to monitor for potential increase of TCE. The ultimate purpose of the RAOs was to prevent exposure and risks to humans through the use of groundwater as a source of potable water. ICs have been implemented to prevent groundwater use, and therefore, the ultimate objective of the remedial action, i.e., preventing exposure through groundwater use, may have been achieved.

An increased focus on the TCE concentrations in the shallow groundwater and the potential vapor intrusion pathway posed to buildings in the vicinity of the Site has resulted in investigation of this potential pathway at homes and businesses located near the Site under RAP Modification #1 to the Consent Order. This investigation has determined that many homes and a commercial business are being affected by vapor intrusion and remedial actions are being taken to address this pathway.

The overall objective at any site is to prevent exposure and risks to human and environmental receptors. At this Site, constituents are present in soil and groundwater. Exposure to constituents in soil is not a pathway of concern because of the depth of the release (waste was poured into stacked perforated drums with much of the release likely towards the bottom of the drums [approximately 12 ft bgs]) and studies that indicate TCE in shallow soil are not a concern for dermal contact. In addition, ICs limit the potential for contact with soil at depths greater than 4 ft bgs. Groundwater is not used as a drinking water resource (**Section IV.3** and **Appendix B**); therefore, this pathway is not a concern. However, TCE in shallow groundwater has recently been determined to be a potential source for soil gas vapors posing a risk of vapor intrusion into residential buildings. In light of the changing exposure pathways, a reevaluation of RAOs and response actions may be warranted.

Changes in chemical-specific target levels are provided in **Table 4.** This table does not reflect cleanup levels, which considers both toxicity and exposure potential but only reflects changes in toxicity. For example, the cleanup level established for the shallow groundwater was set at 270 µg/L, likely reflecting the toxicity value of a 10^{-6} risk at 2.7 µg/L, and an expected dilution and attenuation of 100 between the aquifer for which the cleanup level was established and any well that could be used as a source of potable water. The new target level of a 10^{-6} risk at 0.6 µg/L suggests that this cleanup level should be lowered if potable use of groundwater were still a concern. However, an IC has been implemented and this cleanup level is no longer relevant. Cleanup levels for air have been developed for soil gas and are discussed in the RAP Modification #1 to the Consent Order.

Table 4: Changes in Chemical-Specific Target Levels

Contaminant	Media	Target Level (a)		Citation/Year
TCE	groundwater	Previous	10^{-6} risk at 2.7 µg/L	USEPA 1985
		New	10^{-6} risk at 0.6 µg/L	USEPA 2011
TCE	groundwater	Previous	30 µg/L	USEPA 2001
		New	18 µg/L	USEPA 2011
TCE	Air	Previous	10^{-6} risk at 0.6 µg/m^3	USEPA 2001
		New	10^{-6} risk at 0.025 µg/m^3	USEPA 2011
TCE	Air	Previous	40 µg/m^3	USEPA 2001
		New	2 µg/m^3	USEPA 2011

(a) Risk values are for continuous lifetime exposure at these concentrations; other values are concentrations considered unlikely to cause noncancer effects. The values noted as "previous" is the risk-based target level based on the older toxicity values considered in developing site cleanup goals and in earlier FYRs; the value noted as "new" are target cleanup levels based on the updated toxicity values.

VII.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Groundwater RAs currently being evaluated under this FYR focused on groundwater as a source of drinking water. Drinking water is not obtained from groundwater. However, the Site groundwater cleanup levels were set at a 10^{-6} risk level for the drift and 10^{-4} cancer risk level for the Carimona Member, using the toxicity information available at the time. The Site groundwater cleanup levels were not set at drinking water MCLs. In addition, through the imposition of ICs, future potential groundwater use as a source of drinking water is no longer a concern. Therefore, the remedy for the drinking water pathway remains protective of human health and the environment. However, the Consent Order RAOs and cleanup levels do not address the risk of soil gas vapors to indoor air pathway. As noted previously, the MPCA and GMI entered into an agreement (RAP Modification #1 to the Consent Order) to implement the RAs to address potential vapor intrusion risks associated with the VOCs at the Site. The RAs to be performed include: 1) sub-slab sampling and mitigation of potential vapor intrusion from VOCs in the soil and groundwater and 2) to conduct additional sampling and monitoring of soil, soil gas, and groundwater to collect data necessary to identify and evaluate RA alternatives as may be necessary to reduce VOC concentrations in soil, soil gas and groundwater to concentrations that adequately protect human health and the environment. RAs under the RAP Modification #1 will be evaluated under the next FYR.

VII.4 Technical Assessment Summary

In summary, the groundwater remedy is functioning as intended by the Consent Order and the drinking water pathway remains protective of human health and the environment. There were no changes in federal standards identified in this five-year period; however, there were changes in toxicity for TCE and changes in State standards. Groundwater monitoring indicates that the idled pump-out and treatment systems continue to meet the RAOs and cleanup levels as specified in the Consent Order. However, an increase in TCE concentrations in recent sampling events indicates an increase in contaminant concentrations may be occurring.

Several monitoring and pump-out wells require maintenance. These wells are only inspected during the groundwater monitoring event (currently every five years). Annual well inspection and repair, as necessary, is recommended.

Recent concerns have been raised about the TCE concentrations in the shallow groundwater and the potential vapor intrusion pathway posed to buildings in vicinity of the Site. In accordance with RAP Modification #1 to the Consent Order, investigation activities are underway and soil sub-slab vapor mitigation systems are being installed into buildings in vicinity of the Site to address the vapor intrusion pathway.

VIII. ISSUES/RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 5: Issues/Recommendations and Follow-up Actions

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
						Current	Future
GW	1. The site inspection identified several wells requiring maintenance and repair. See Appendix E for a complete list of wells and repairs needed.	Repair wells.	GMI	MPCA	2/2/2015	Yes	Yes
GW	2. Most of the wells are in high traffic areas and LTM & O&M of the wells every five years is not adequate to ensure compliance with the MN well code.	Annual LTM and O&M are recommended.	GMI	MPCA	4/15/2015	Yes	No
GW	3. LTM of groundwater every five years is not adequate to monitor compliance with RAOs and cleanup levels.	Annual LTM is recommended.	GMI	MPCA	4/15/2015	No	Yes
GW	4. Groundwater monitoring network is inadequate	Monitoring wells will be installed as part of vapor intrusion investigation. Evaluate remedial alternatives to meet RAOs established under Issue 5.	GMI	MPCA	4/15/2015	No	Yes
GW Soil	5. Institutional Controls. The legal description alone is not adequate to identify the “Groundwater Impacted Area” and the “Soil Impacted Area”.	Create a figure with GIS coordinates. Place figure in a readily available location for potential future needs (i.e., utility locators and construction).	GMI	MPCA	4/15/2015	No	Yes
GW Air	6. Groundwater to indoor air pathway. Groundwater cleanup levels for vapor intrusion have not been established.	Develop groundwater RAOs and cleanup levels for vapor intrusion pathway.	GMI	MPCA	11/15/2015	Yes	Yes

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
						Current	Future
GW Soil Air	7. Human Health toxicity values for TCE have decreased.	Complete comprehensive risk assessment for all potential pathways.	GMI	MPCA	7/15/2015	Yes	Yes

In addition, the following are recommendations that were identified during the FYR that improve effectiveness of the remedy, provide technical improvement, improve management of O&M, and accelerate site close out, but do not affect current protectiveness:

- AMR should continue to present historical contaminant concentrations along with all VOCs detected. Statistical trend analysis should be performed to support stable/ receding contaminant concentrations/plume boundaries.
- MNA parameters should be collected from targeted wells for the evaluation of biodegradation potential and bioremediation to aid in evaluating all possible feasible RA for the vapor intrusion FS.
- Soil in the adsorption pit area is unlikely to be an exposure concern, and soil remediation is unlikely to reduce source material, as documented in several reports (Barr 2001; Barr 2014b; Barr, 2014c). However, some summary communication regarding these issues should be prepared in light of public concern.

IX. PROTECTIVENESS STATEMENT(S)

Protectiveness Statement(s)		
Operable Unit: Groundwater	*Protectiveness Determination:* Protective	*Addendum Due Date (if applicable):* Not Applicable
Protectiveness Statement: The groundwater remedy is protective of human health and the environment because there are no known drinking water receptors and because institutional controls are in place.		

Groundwater remedial actions evaluated under this FYR review focused on groundwater as a source of drinking water. The Consent Order cleanup levels have been met. However, the cleanup levels are not set at drinking water MCLs. Through the imposition of ICs, groundwater use is not a concern as a potable drinking water source; therefore, the remedy remains protective of human health and the environment.

Protectiveness Statement(s)		
Operable Unit: Soil	*Protectiveness Determination:* Protective	*Addendum Due Date (if applicable):* Not Applicable
Protectiveness Statement: The no further action remedy for the soils is protective of human health and the environment.		

A restrictive covenant is in place that identifies land use restrictions as well as prohibiting access to soils below 4 ft bgs within the Soil Impacted Area.

Protectiveness Statement(s)		
Operable Unit: Air	*Protectiveness Determination:* Short-term Protective	*Addendum Due Date (if applicable):* Next FYR
Protectiveness Statement: A new exposure pathway (vapor intrusion) has been identified. The sub-slab soil vapor mitigation systems currently protect human health and the environment because sub-slab vapor mitigation systems are preventing vapor intrusion. However, in order for the remedy to be protective in the long-term, a RI and FS, including a risk evaluation for ongoing source to soil gas/air, must be completed, and RAs implemented as needed to ensure protectiveness. This exposure pathway will be evaluated at the next FYR.		

In order to address vapor intrusion concerns the Consent Order was amended on March 11, 2014, “RAP Modification #1” (MPCA, 2014). Investigation activities are underway and soil sub-slab vapor mitigation systems are being installed in residential and commercial buildings to address the vapor intrusion pathway. Implementation of RAP Modification #1 will be evaluated under the next FYR.

X. NEXT REVIEW

Hazardous substances or contaminants will remain at the Site and will not allow for UU/UE. The presence of hazardous substances will require additional FYRs of the Site. The next FYR is scheduled for completion five years from the signature date of this review.

Appendix A

Figures

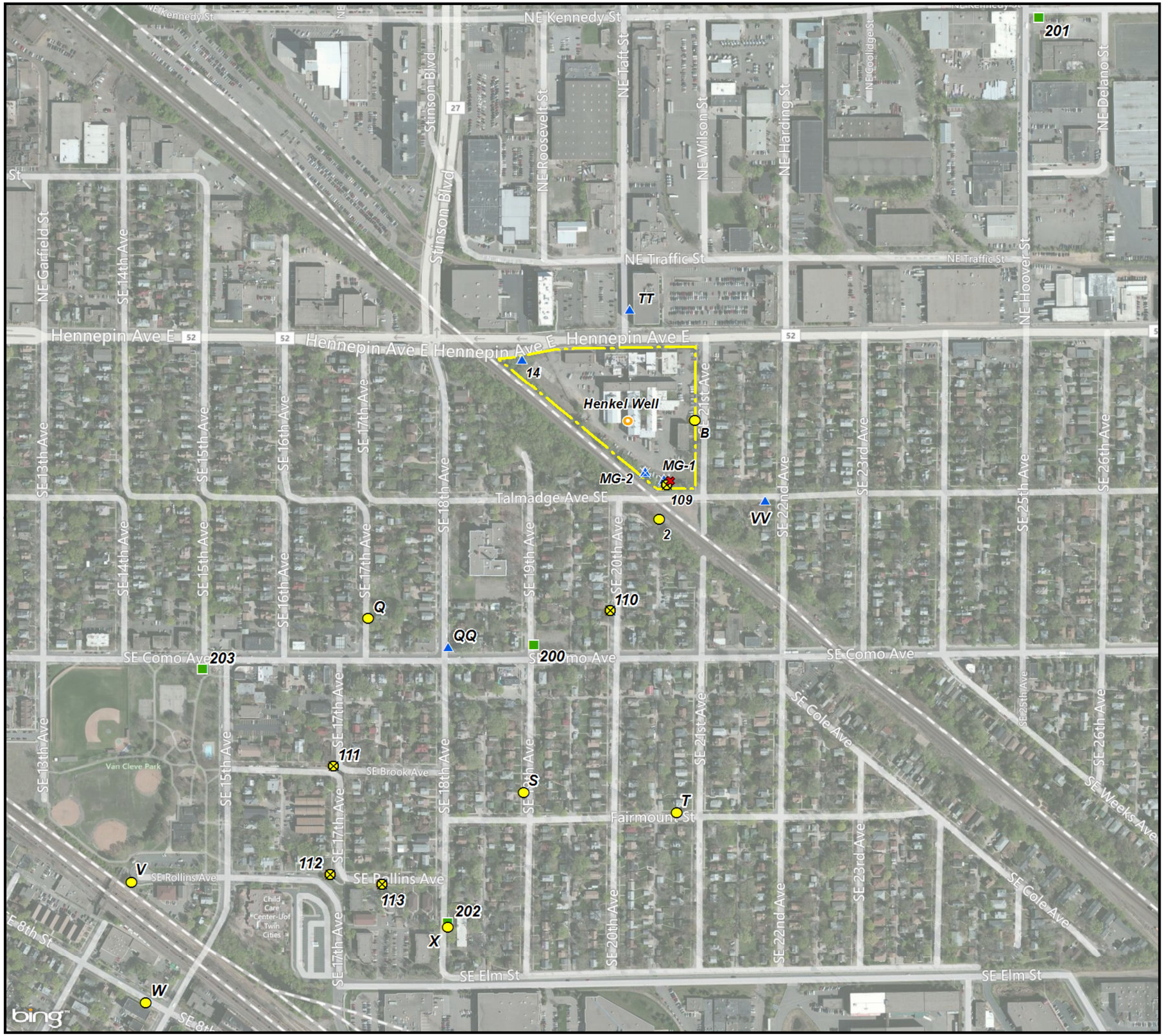
Figure 1 Monitoring Well Location Map

Figure 2 Zoning Map

Figure 3A Well Pictures -South of Como

Figure 3B Well Pictures -North of Como

Figure 4 Site Inspection Observations



Y:\Clients\MPCA\SR_3_General_Mills\MapDocs\J140141 FIG 1 Monitoring Well Map.mxd

Figure 1

2014 Five Year Review Monitoring Well Locations

General Mills

2010 E Hennepin Avenue, Minneapolis

Map Projection: NAD 1983 UTM Zone 15N
Basemap: Bing Aerial WMS

0 400 800 Feet

0 125 250 Meters

1 Inch = 400 Feet

- Absorption Pit
- Glacial Drift Pump-Out Well
- Glacial Drift Well
- Magnolia Member Monitoring Well
- Magnolia Member Pump-Out Well
- Prairie du Chien Monitoring Well
- St. Peter Sandstone Monitoring Well
- General Mills/Henkel Superfund Site

Bay West
Customer-Focused Environmental & Industrial Solutions

Drawn By: S.G. Date Drawn/Revised: 7/29/2014 Project No. J140141

Figure 2

Zoning Map

General Mills

2010 E Hennepin Avenue, Minneapolis

Map Projection: NAD 1983 UTM Zone 15N
Basemap: Bing Aerial WMS

0 400 800 Feet

0 125 250 Meters

1 Inch = 400 Feet

- Absorption Pit
- Glacial Drift Pump-Out Well
- Glacial Drift Well
- Magnolia Member Monitoring Well
- Magnolia Member Pump-Out Well
- Prairie du Chien Monitoring Well
- St. Peter Sandstone Monitoring Well
- General Mills/Henkel Superfund Site
- Residential Zoned Parcel
- Commercial Zoned Parcel
- Industrial Zoned Parcel

Bay West
Customer-Focused Environmental & Industrial Solutions

Drawn By: S.G. Date Drawn/Revised: 9/29/2014 Project No. J140141

Y:\Clients\MPCA\SR_3_General_Mills\MapDocs\J140141 FIG 2 Zoning Map.mxd

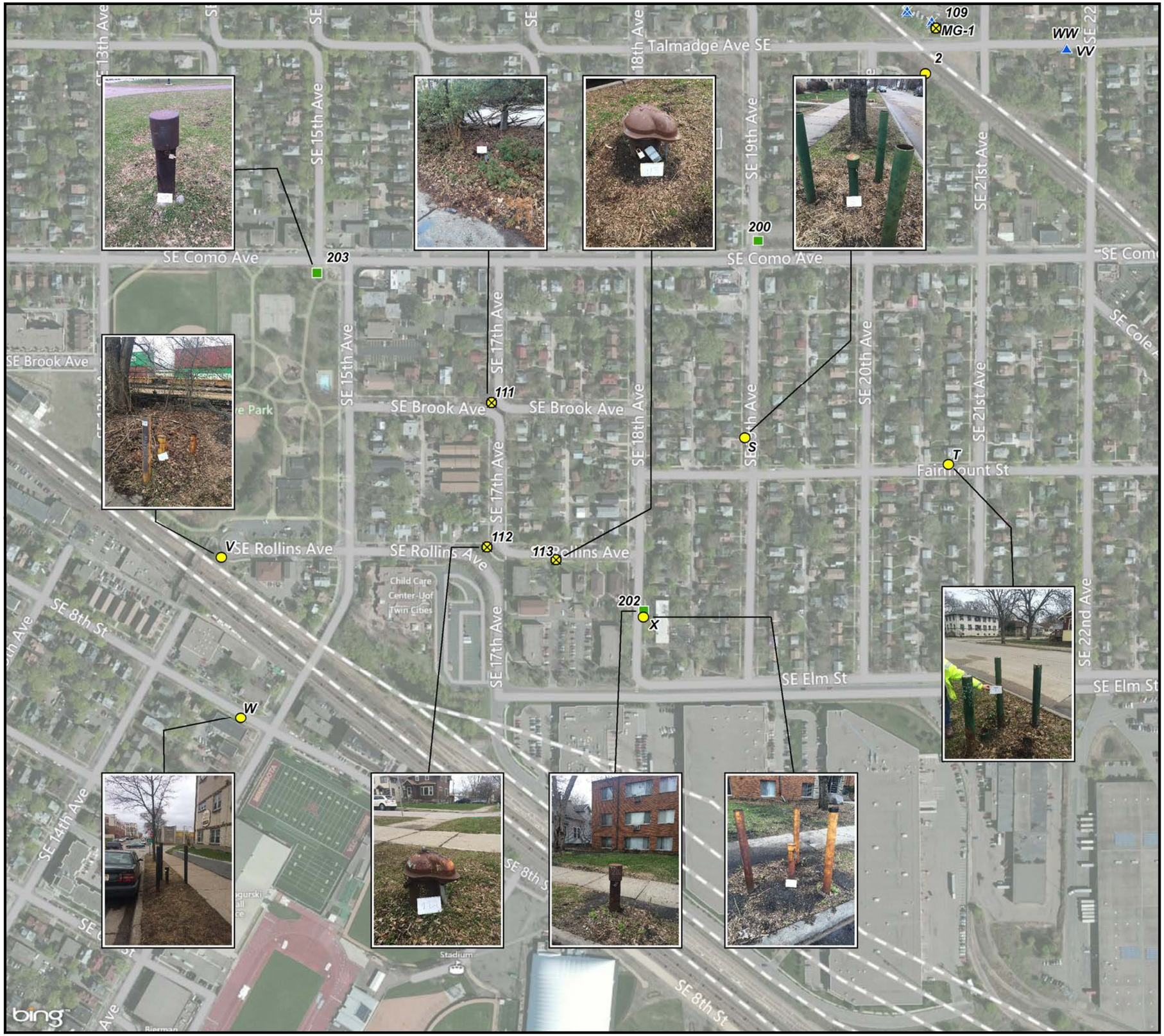


Figure 3A

2014 Five Year Review Monitoring Well Images (South of Como Ave.)

General Mills

2010 E Hennepin Avenue, Minneapolis

Map Projection: NAD 1983 UTM Zone 15N
Basemap: Bing Aerial WMS

0 300 600 Feet

0 75 150 Meters

1 Inch = 300 Feet

- Glacial Drift Pump-Out Well
- Glacial Drift Well
- Magnolia Member Monitoring Well
- Magnolia Member Pump-Out Well
- Prairie du Chien Monitoring Well
- St. Peter Sandstone Monitoring Well

Bay West
Customer-Focused Environmental & Industrial Solutions

Drawn By: S.G. Date Drawn/Revised: 9/29/2014 Project No. J140141

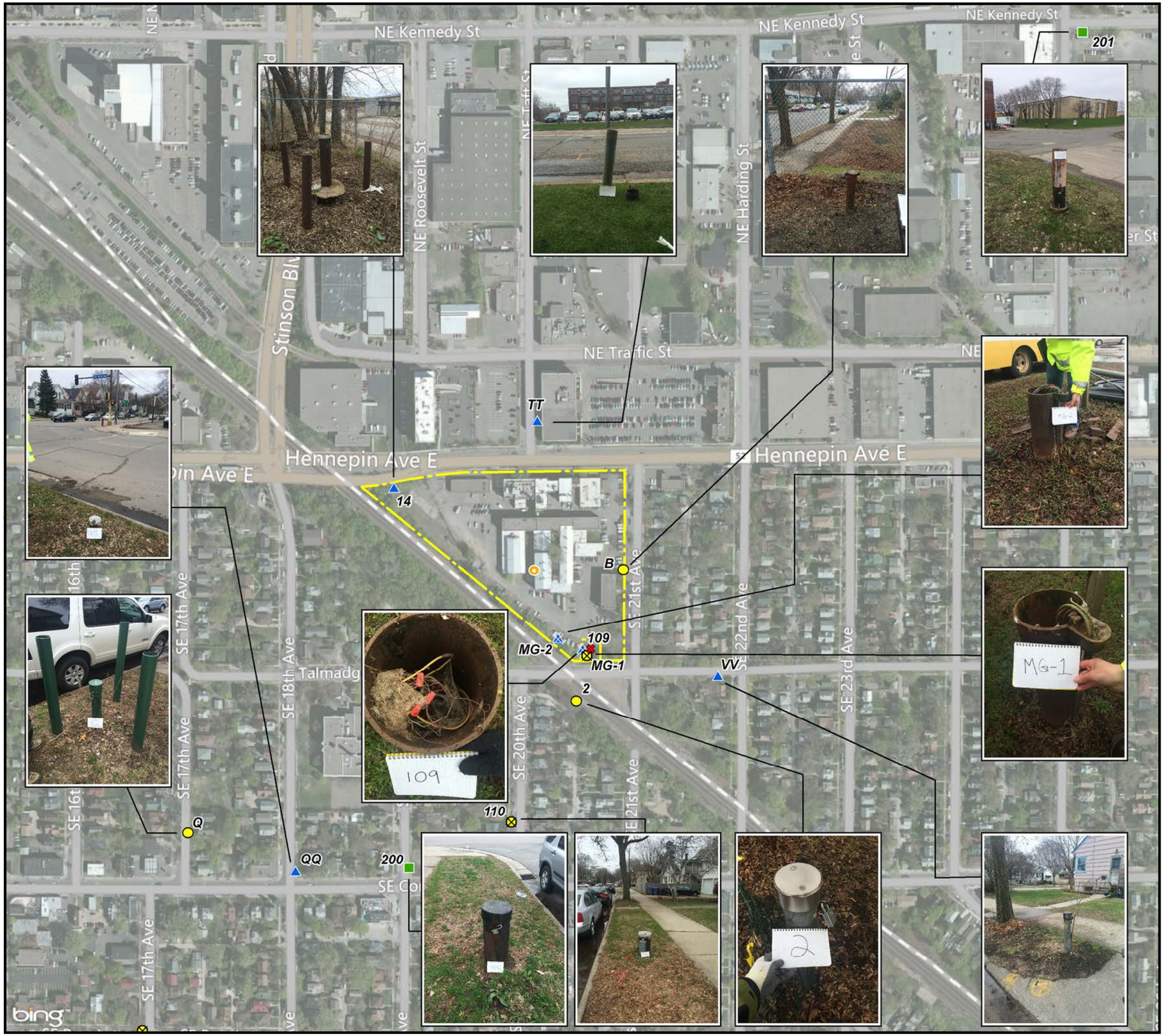
Y:\Clients\MPCA\SR_3_General_Mills\MapDocs\J140141 FIG 3A Well Pictures_South of Como.mxd

Figure 3B

2014 Five Year Review Monitoring Well Images (North of Como Ave.)

General Mills

2010 E Hennepin Avenue, Minneapolis



Map Projection: NAD 1983 UTM Zone 15N
Basemap: Bing Aerial WMS

0 300 600 Feet

0 75 150 Meters

1 Inch = 300 Feet

- Absorption Pit
- Glacial Drift Pump-Out Well
- Glacial Drift Well
- Magnolia Member Monitoring Well
- Magnolia Member Pump-Out Well
- Prairie du Chien Monitoring Well
- St. Peter Sandstone Monitoring Well

Bay West
Customer-Focused Environmental & Industrial Solutions

Drawn By: S.G. Date Drawn/Revised: 9/29/2014 Project No. J140141

Y:\Clients\MPCA\SR_3_General_Mills\MapDocs\J140141 FIG 3B Well Pictures_North of Como.mxd

Figure 4

2014 Five Year Review Site Inspection Observations

General Mills

2010 E Hennepin Avenue, Minneapolis

Map Projection: NAD 1983 UTM Zone 15N
Basemap: Bing Aerial WMS

0 100 200 Feet
0 30 60 Meters
1 Inch = 100 Feet

- Absorption Pit
- Glacial Drift Pump-Out Well
- Glacial Drift Well
- Magnolia Member Monitoring Well
- Magnolia Member Pump-Out Well
- Prairie du Chien Monitoring Well
- St. Peter Sandstone Monitoring Well
- Geoprobe Study Area
- New Community Garden
- Parcel Boundary
- Stripper Tower
- Fence

Bay West
Customer-Focused Environmental & Industrial Solutions

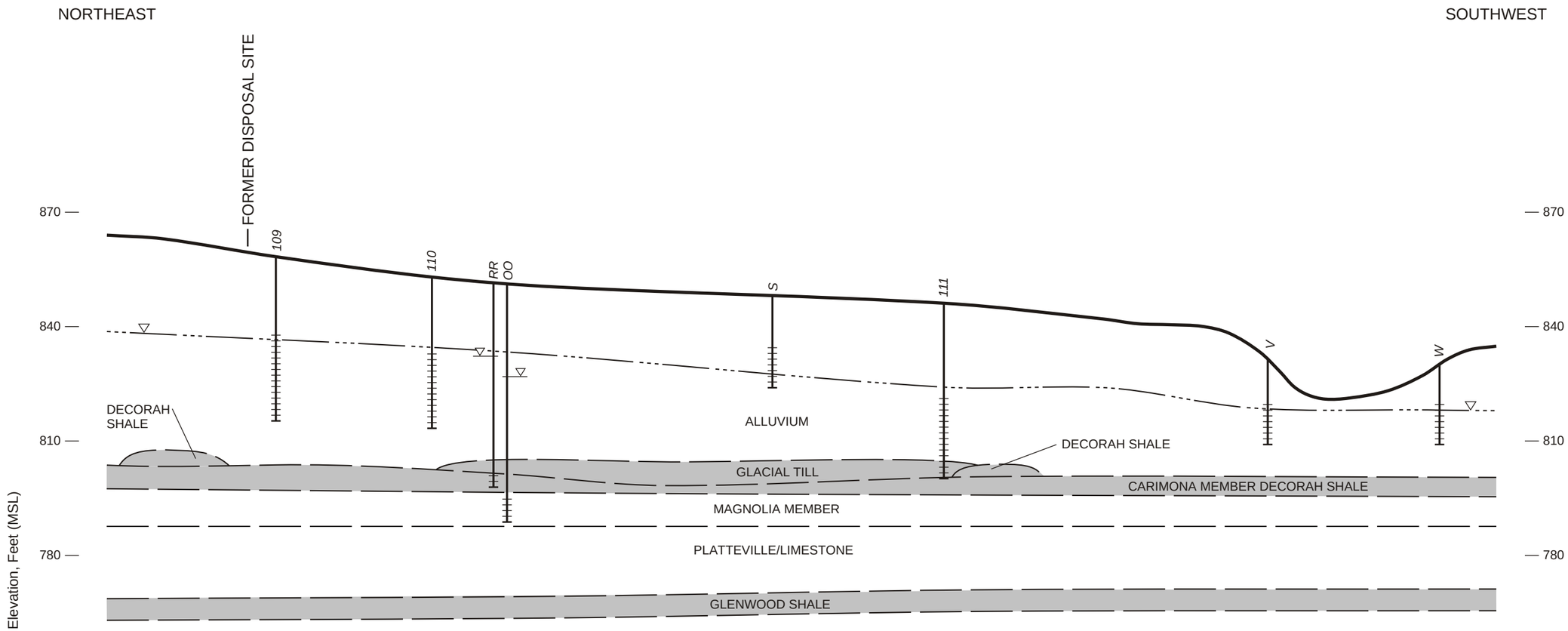
Drawn By: S.G. Date Drawn/Revised: 7/29/2014 Project No. J140141

Y:\Clients\MPCA\SR_3_General_Mills\MapDocs\J140141 FIG 4 Site Inspection Observations.mxd

Appendix B

Historical Data Tables and Figures

Figures



ALLUVIUM

Sand, gravelly sand and silty sand, sometimes overlain by bogs and marshes which have been drained and filled. Overlying soil is variable in composition often clayey or silty. Thickness ranges from 23 to 57 feet.

GLACIAL TILL

Gray and red tills associated with Des Moines and Superior lobes. Unsorted material with variable texture containing clay sizes and boulders. Sometimes underlain by thin layer of Alluvium. Contains sand lenses. Absent in many places, up to 20 feet thick.

DECORAH SHALE

Greenish-gray to olive-gray claystone, fissile, fossiliferous, contains several limestone layers. Patchy in this area. Thickness es range up to 50 feet.

Carimona Member: Micrite, fossiliferous, often fractured and weathered. 3.5 to 4.5 feet thick.

PLATTEVILLE/LIMESTONE

Magnolia Member: Fossiliferous micrite, calcitic shale, with rippled bedding, corroded zones, some fractures. 8.5 to 9 feet thick.
Hidden Falls: micrite, shaly, fossiliferous, 6 to 7 feet thick.
Mifflin Member: Thin beds of limestone, interbedded shale, 12 to 13 feet thick.
Pecatonica Member: Dolomite, hard, 1 to 1.5 feet thick.

GLENWOOD SHALE

Green shale, sandy at the base, 3 to 5 feet thick.

ST. PETER SANDSTONE

Light yellow or white, medium grained, massive appearing sandstone composed of rounded and subrounded grains. Thin beds of green shale are present. Ranges in thickness from 150 to 170 feet.

0 300

Approximate Horizontal Scale in Feet
10X Vertical Exaggeration

NOTE: All Features are Approximate

LEGEND

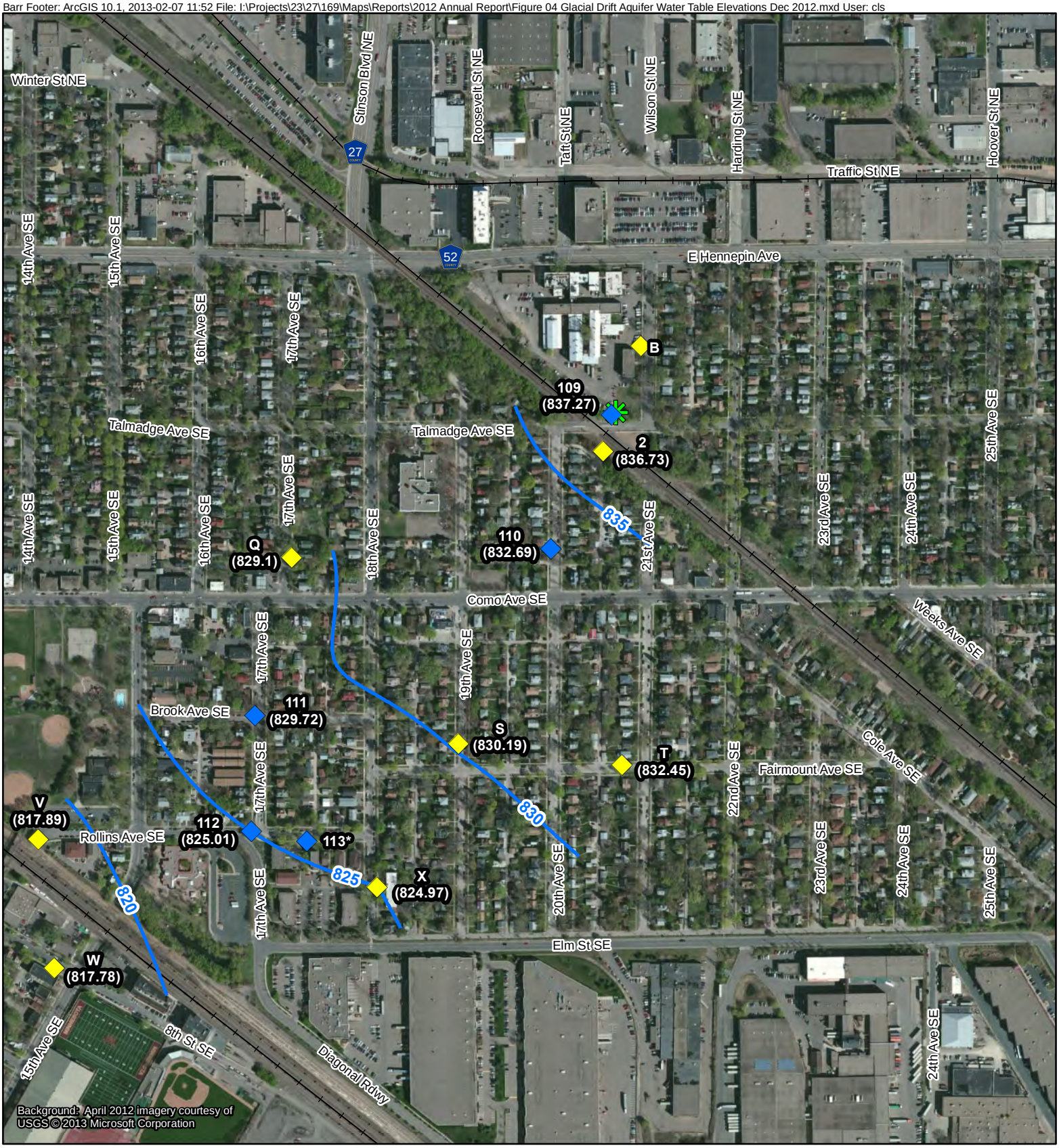
Approximate Water Table

Well and Screened Interval

Figure 3

GENERALIZED GEOLOGIC SECTION
East Hennepin Avenue Site
Minneapolis, Minnesota

P:\Mpls\23 MN\27\23270169\WorkFiles\Figures\Generalized Geologic Section.CDR RLG 03-01-12



Former Disposal Site

Glacial Drift Well

Glacial Drift Pump-Out Well

Water Surface Contour

*Well 113 excluded from the water surface contour calculation based on inconsistent data

0 250 500 1,000

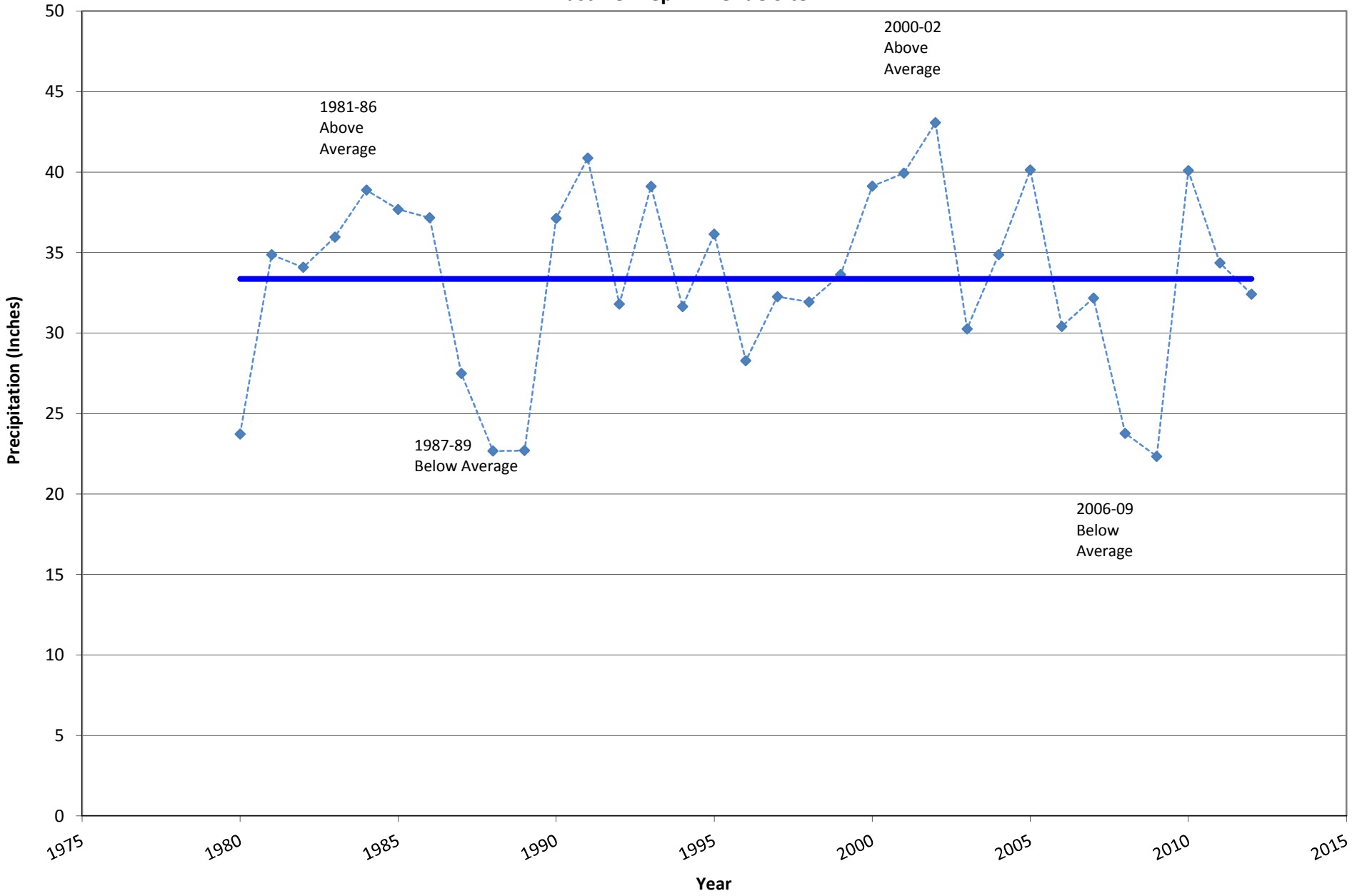
Feet

B-3

Figure 4

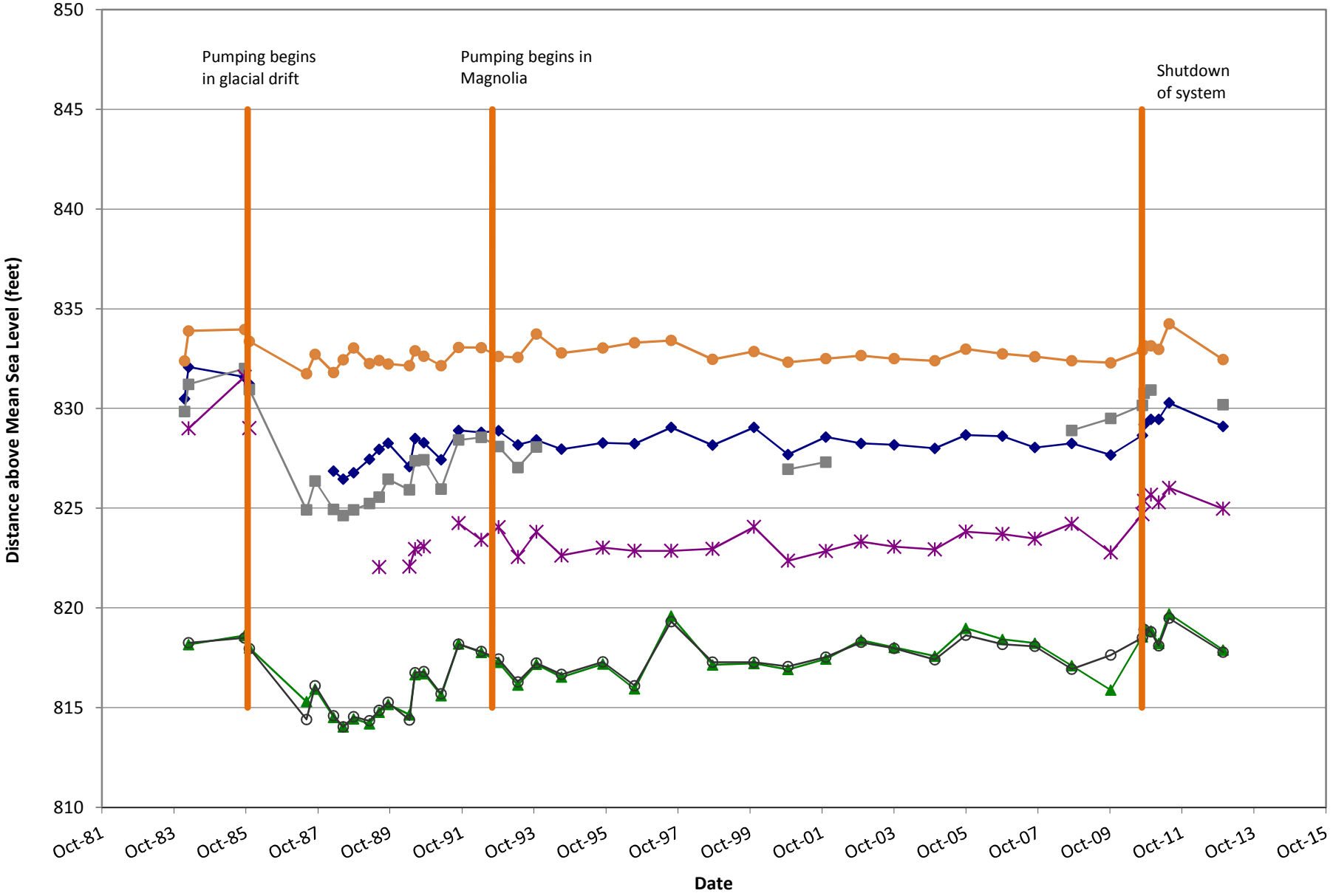
GLACIAL DRIFT AQUIFER
WATER TABLE ELEVATIONS
DECEMBER 14, 2012
East Hennepin Avenue Site
Minneapolis, Minnesota

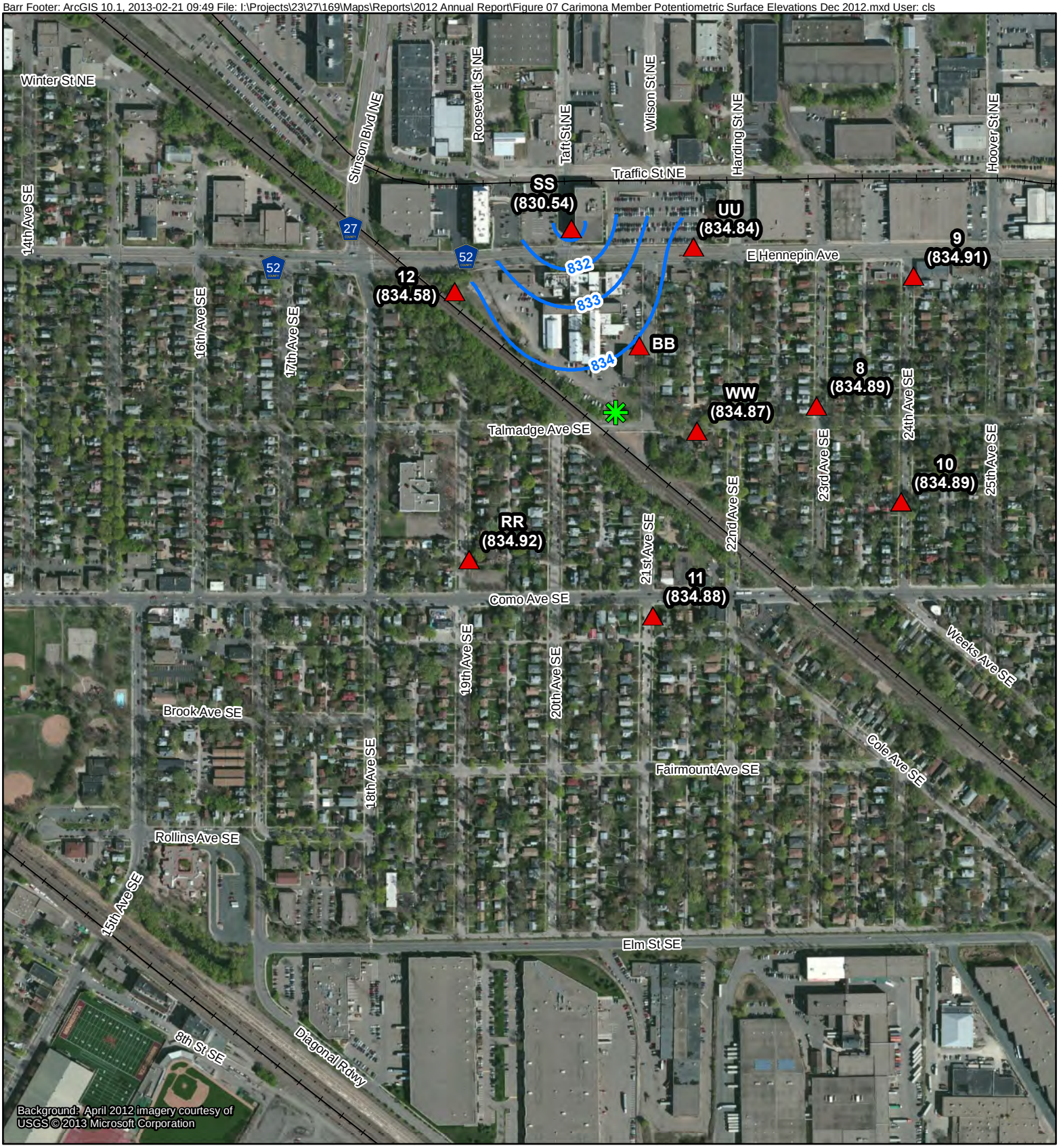
Figure 5
Precipitation Hydrograph
East Hennepin Avenue Site



2/12/2013
P:\Mpls\23 MN\27\2327169\WorkFiles\precipitation_updated thru 2012_JKP.xls\Figure 5a

Figure 6
Glacial Drift Wells - Hydrograph
East Hennepin Avenue Site





Former Disposal Site

Carimona Member Well

Potentiometric Surface Contour

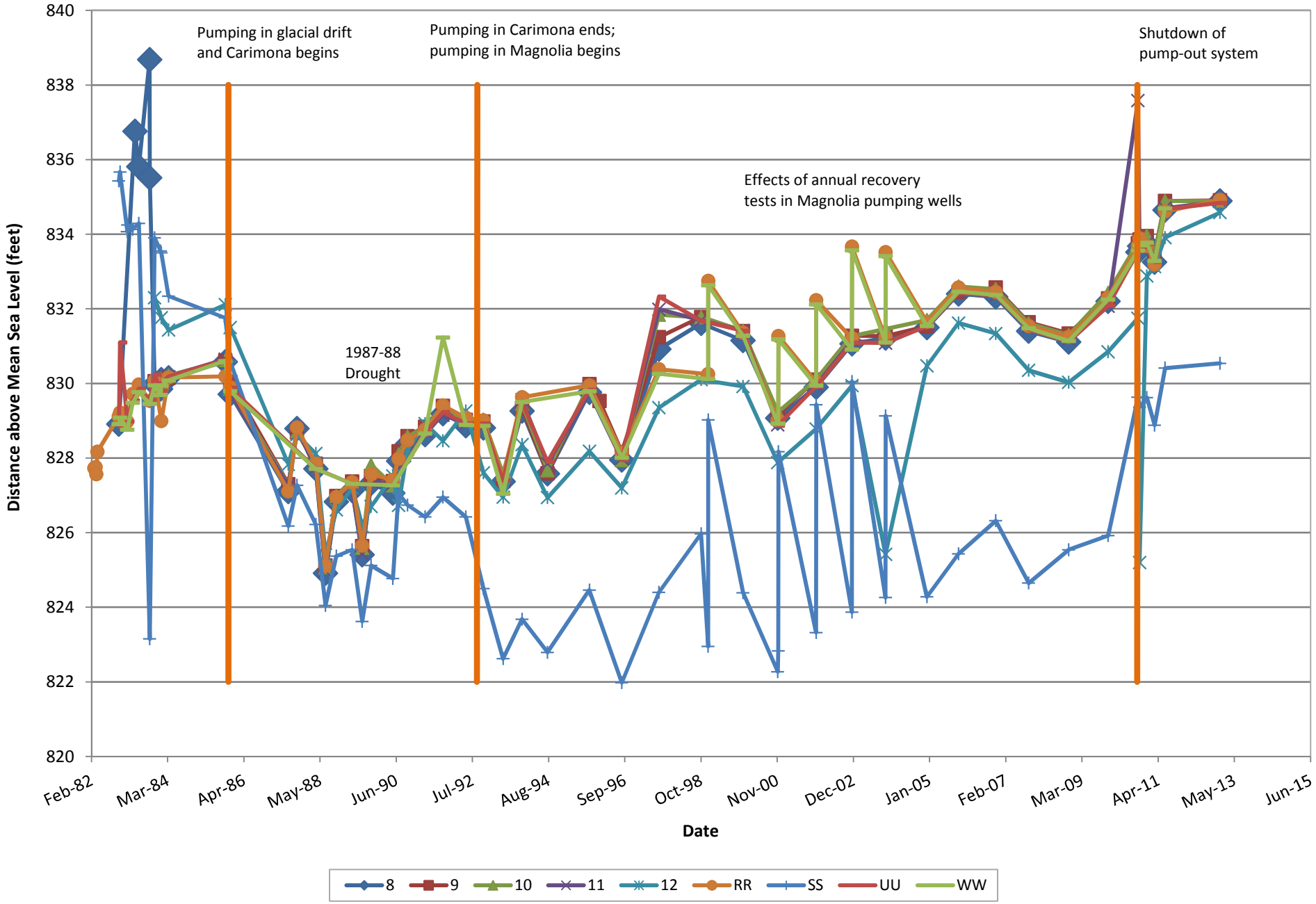
Figure 7

CARIMONA MEMBER POTENTIOMETRIC SURFACE ELEVATIONS DECEMBER 14, 2012
East Hennepin Avenue Site
Minneapolis, Minnesota

0 250 500 1,000

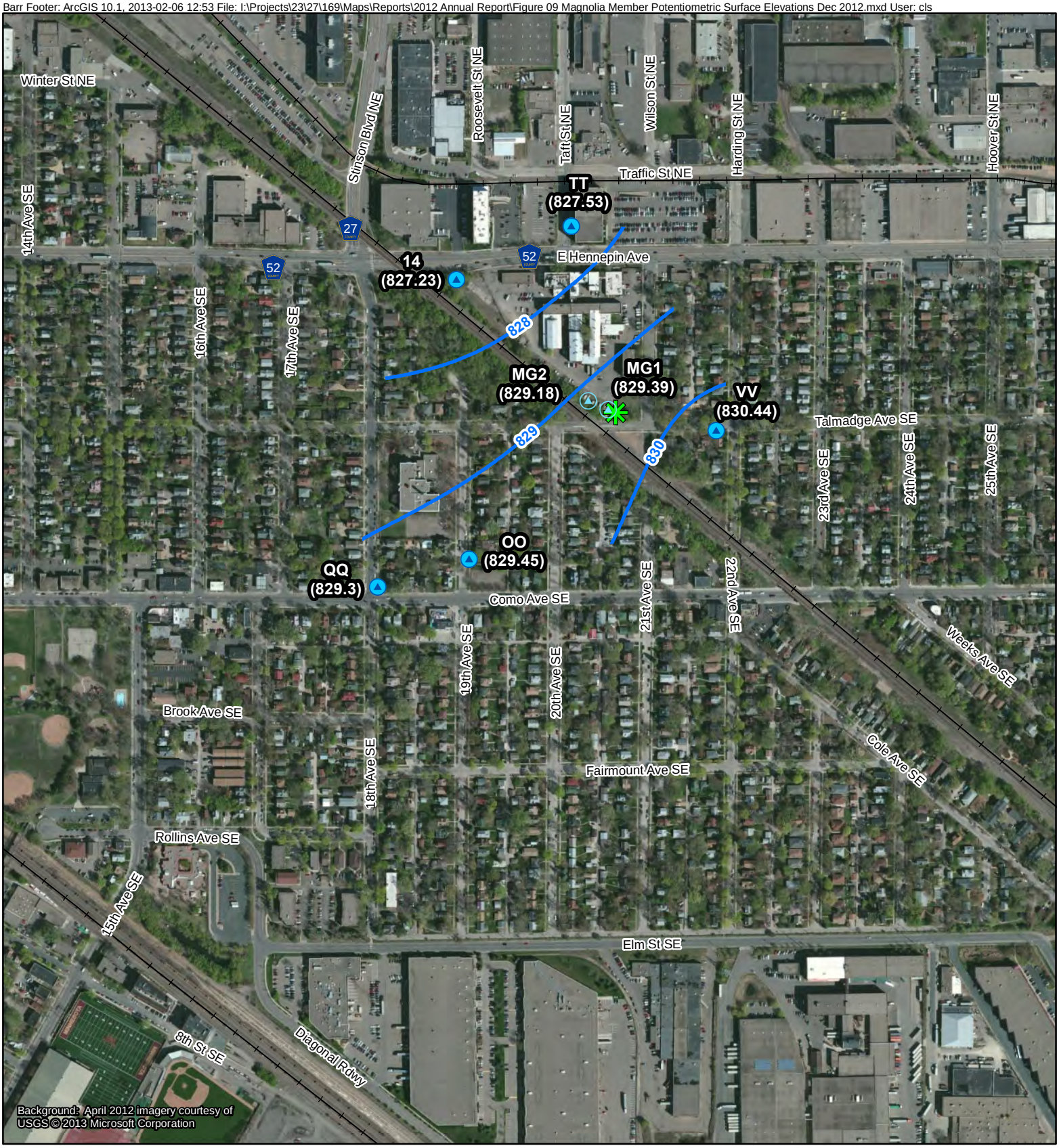
Feet

Figure 8
Carimona Member Wells - Hydrograph
East Hennepin Avenue Site



2
P:\Mpls\23 MN\27\2527169\WorkFiles\carimona water levels2.xls\Figure 7

Barr Footer: ArcGIS 10.1, 2013-02-06 12:53 File: I:\Projects\23\27\169\Maps\Reports\2012 Annual Report\Figure 09 Magnolia Member Potentiometric Surface Elevations Dec 2012.mxd User: cls



Former Disposal Site

Magnolia Member Well

Magnolia Member Pump-Out Well

Potentiometric Surface Contour

0 250 500 1,000

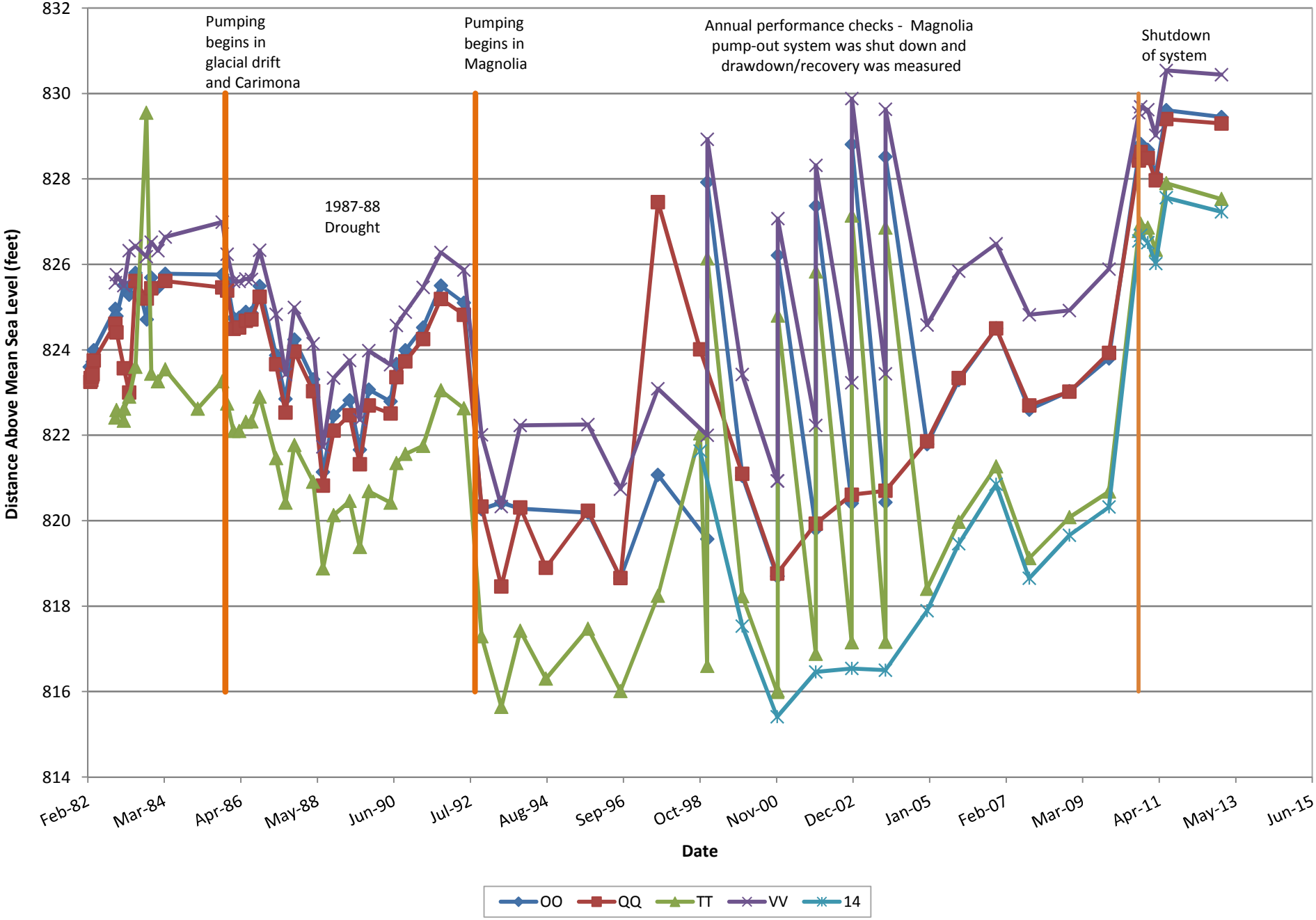
Feet

B-8

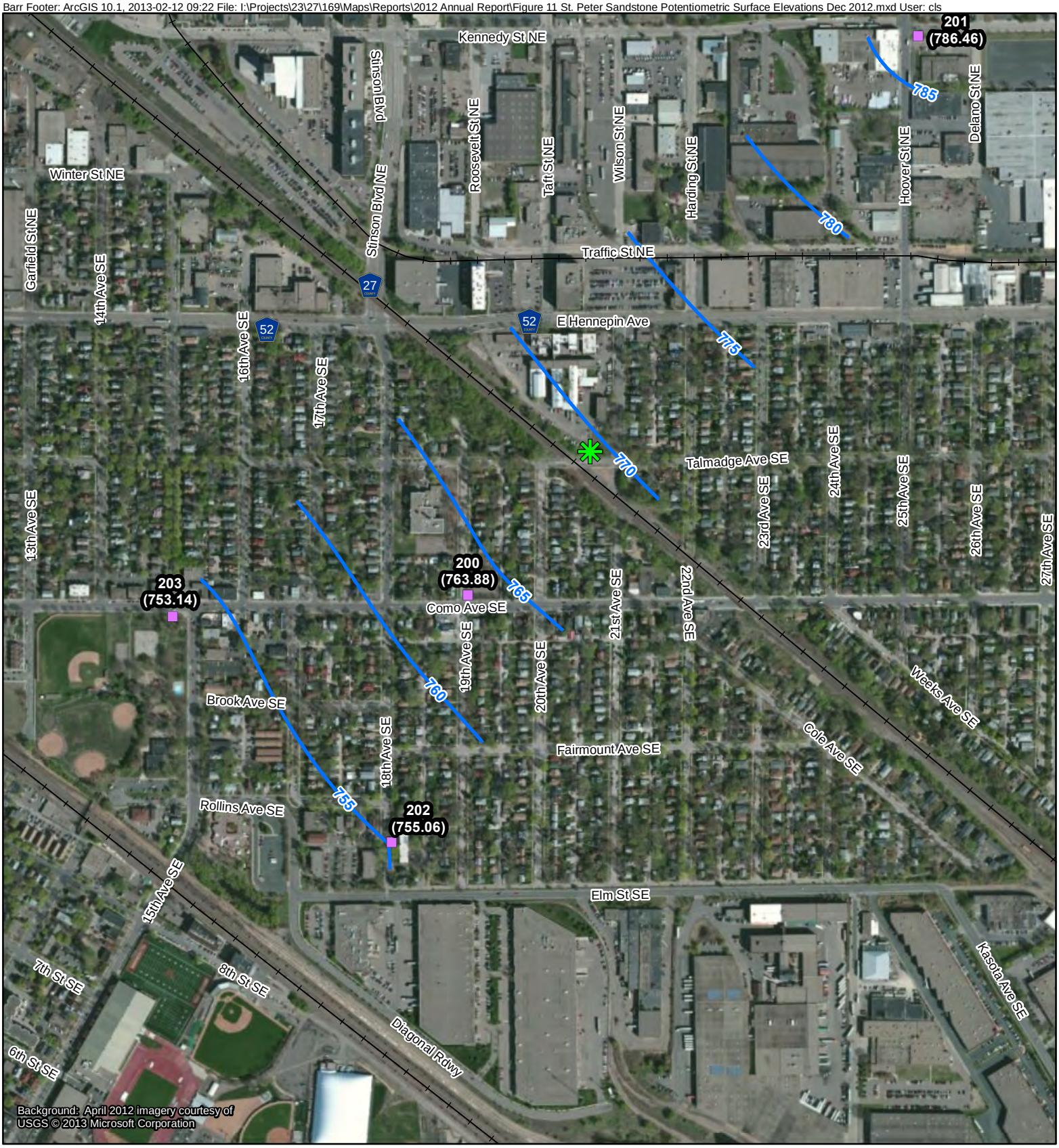
Figure 9

MAGNOLIA MEMBER POTENTIOMETRIC SURFACE ELEVATIONS DECEMBER 14, 2012
East Hennepin Avenue Site
Minneapolis, Minnesota

Figure 10
Magnolia Member Wells - Hydrograph
East Hennepin Avenue Site



2
P:\Mpls\23 MN\27\2327169\WorkFiles\[magnolia water levels.xls]Figure 9



Former Disposal Site

St. Peter Sandstone Monitoring Well

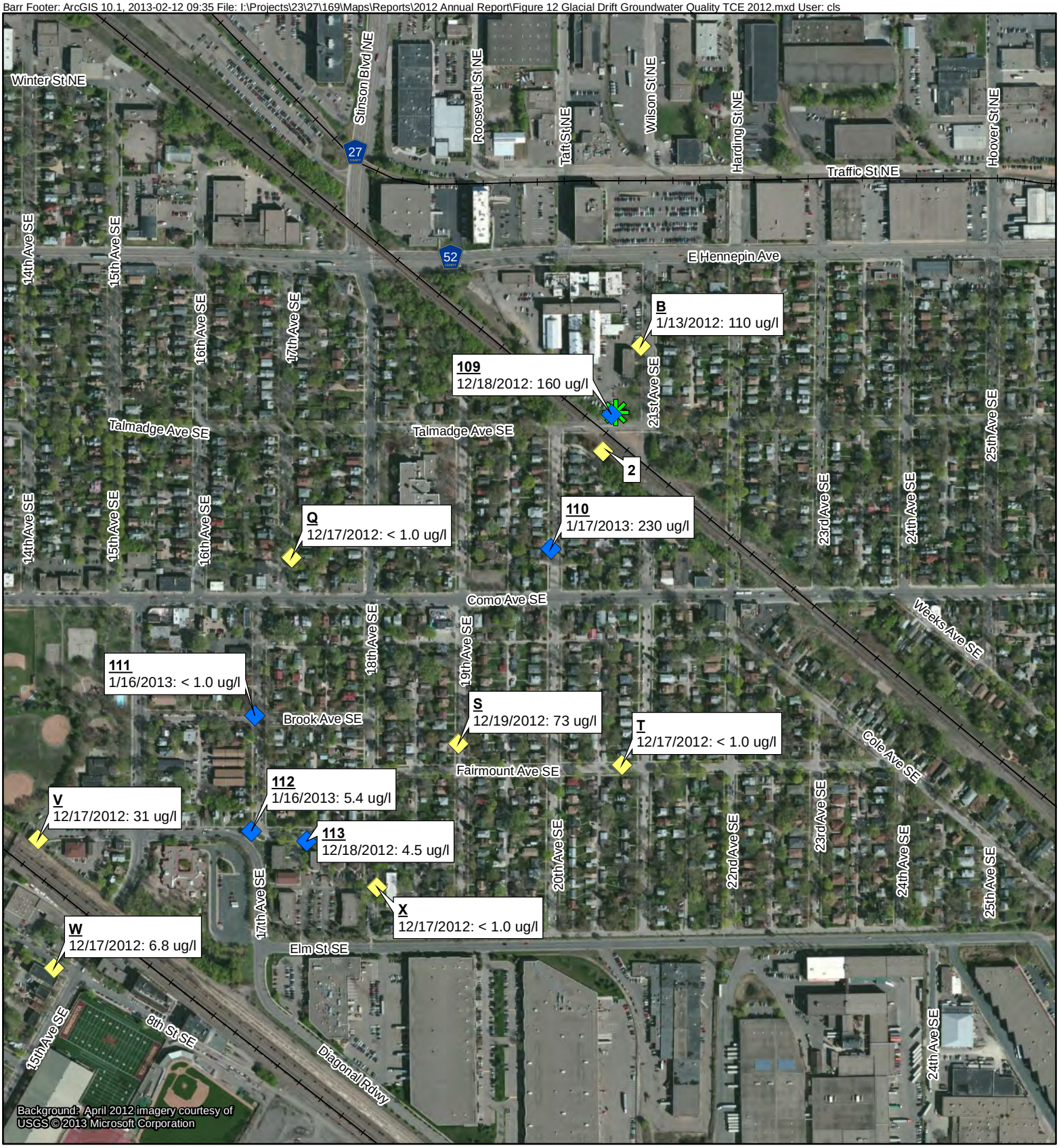
Potentiometric Surface Contour

Figure 11
ST. PETER SANDSTONE
POTENTIOMETRIC
SURFACE ELEVATIONS
DECEMBER 14, 2012
East Hennepin Avenue Site
Minneapolis, Minnesota

0 300 600 1,200

Feet

Barr Footer: ArcGIS 10.1, 2013-02-12 09:35 File: I:\Projects\23\27\169\Maps\Reports\2012 Annual Report\Figure 12 Glacial Drift Groundwater Quality TCE 2012.mxd User: cls



Former Disposal Site

Glacial Drift Well

Glacial Drift Pump-Out Well

Water Surface Contour

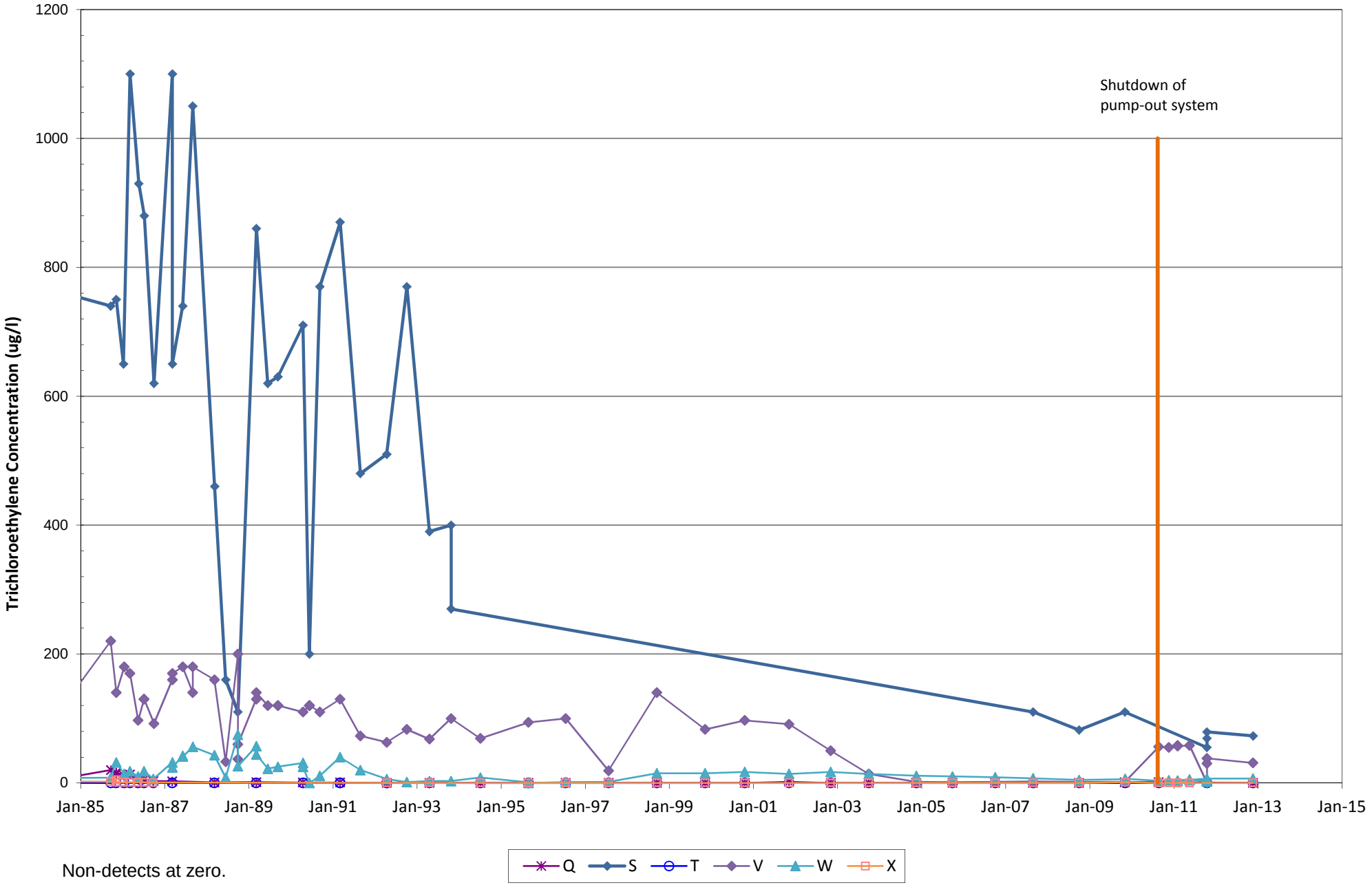
Figure 12

GLACIAL DRIFT GROUNDWATER QUALITY (TCE) - 2012
East Hennepin Avenue Site
Minneapolis, Minnesota

0 250 500 1,000

Feet

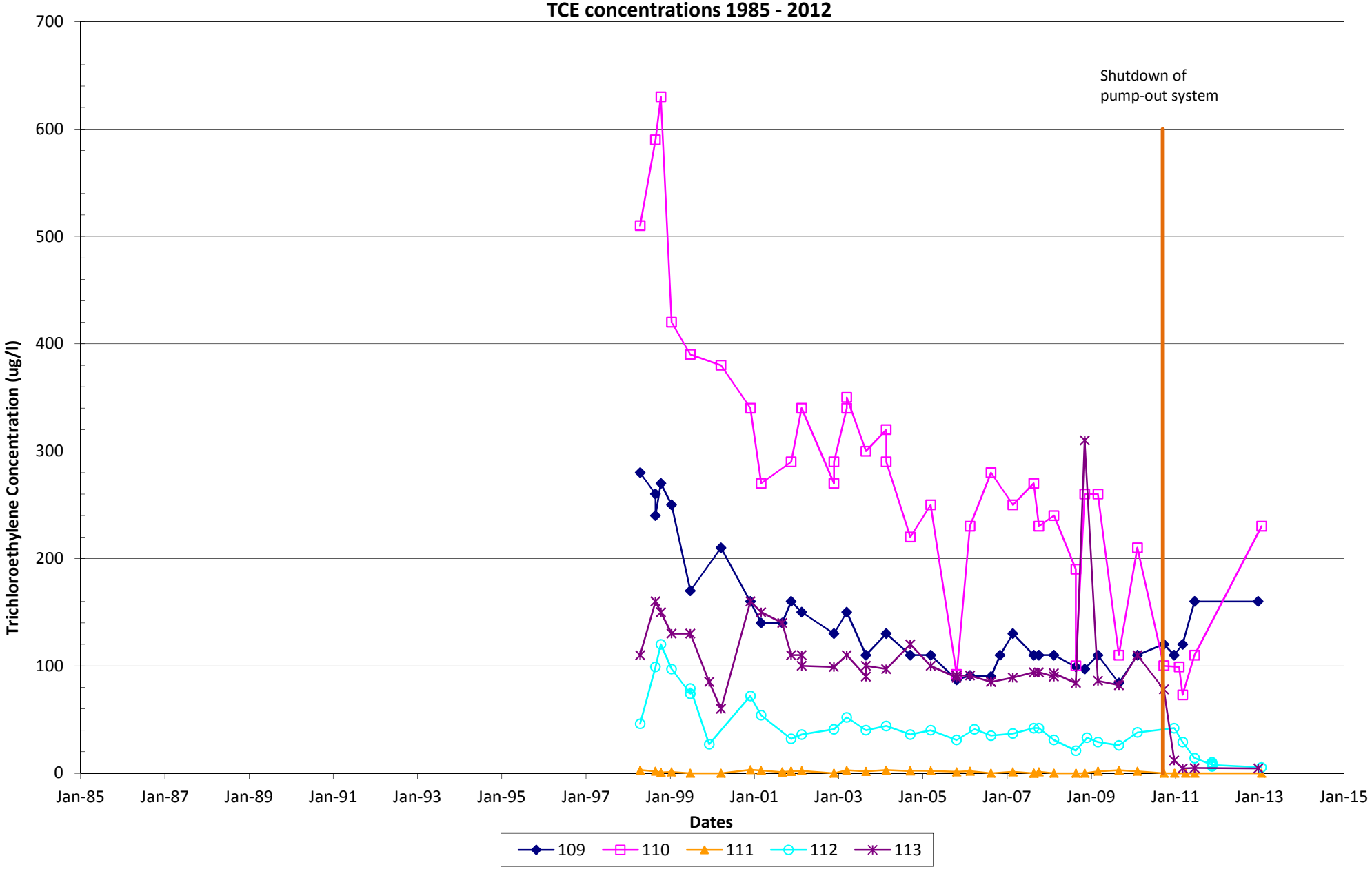
Figure 13
Glacial Drift Monitoring Wells
TCE concentrations 1985 - 2012



Non-detects at zero.

2/21/2013 1:46 PM
P:\Mpls\23 MN\27\2327169\WorkFiles\DATA MGMT\2012 Tables\TCEcharts_01292013_LEB.xlsx

Figure 14
Glacial Drift Pump Out Wells
TCE concentrations 1985 - 2012



Non-detects at zero.
Majority of pre-1998 samples were composited by pump-out system and are not shown on this figure.

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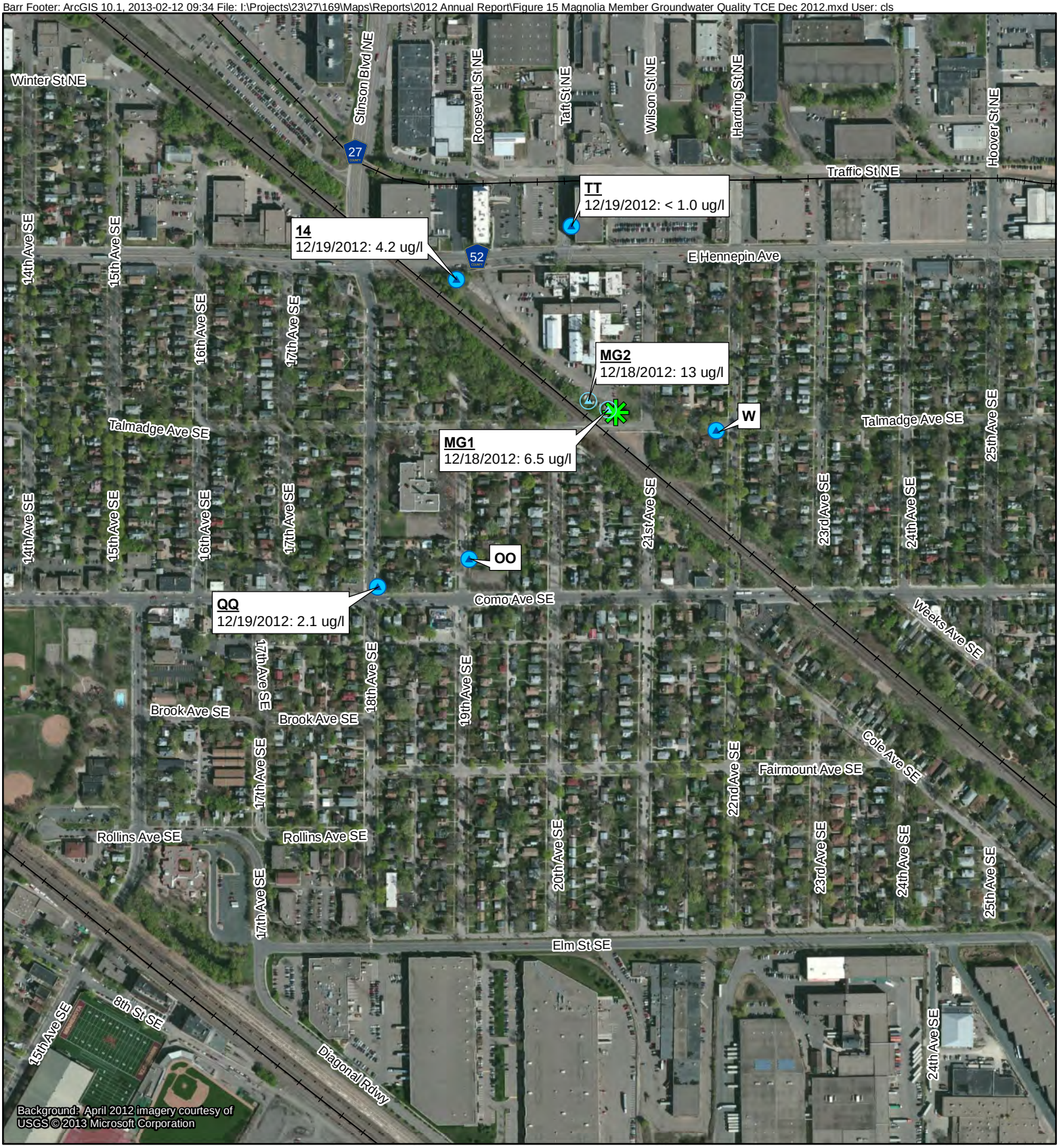
P:\Mpls\23 MN\27\2327169\WorkFiles\DATA MGMT\2012 Tables\TCEcharts_01292013_LEB.xlsx



Former Disposal Site

Magnolia Member Well

Magnolia Member Pump-Out Well

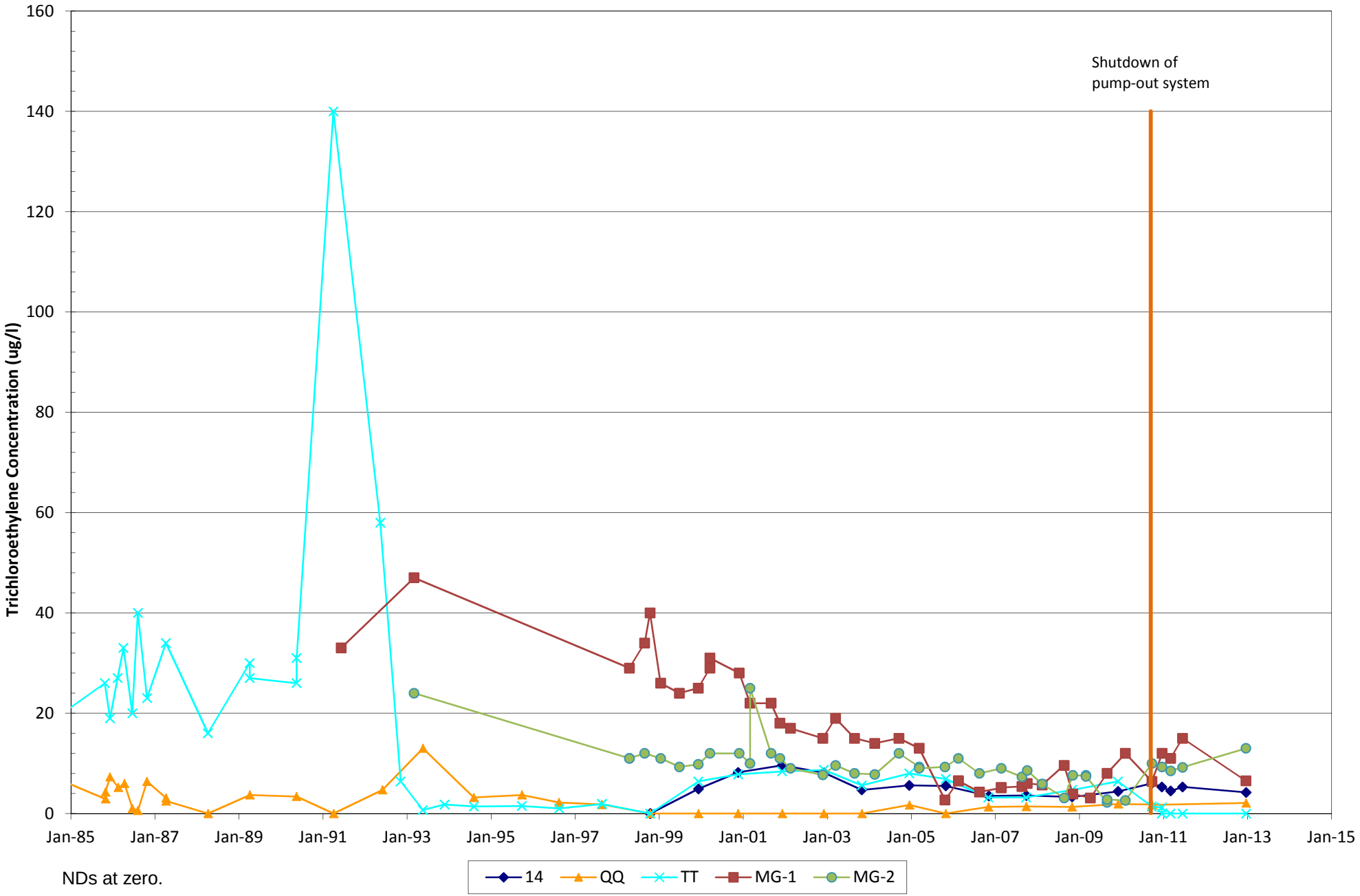
Figure 15

MAGNOLIA MEMBER GROUNDWATER QUALITY (TCE) - DECEMBER 2012
East Hennepin Avenue Site
Minneapolis, Minnesota

0 250 500 1,000

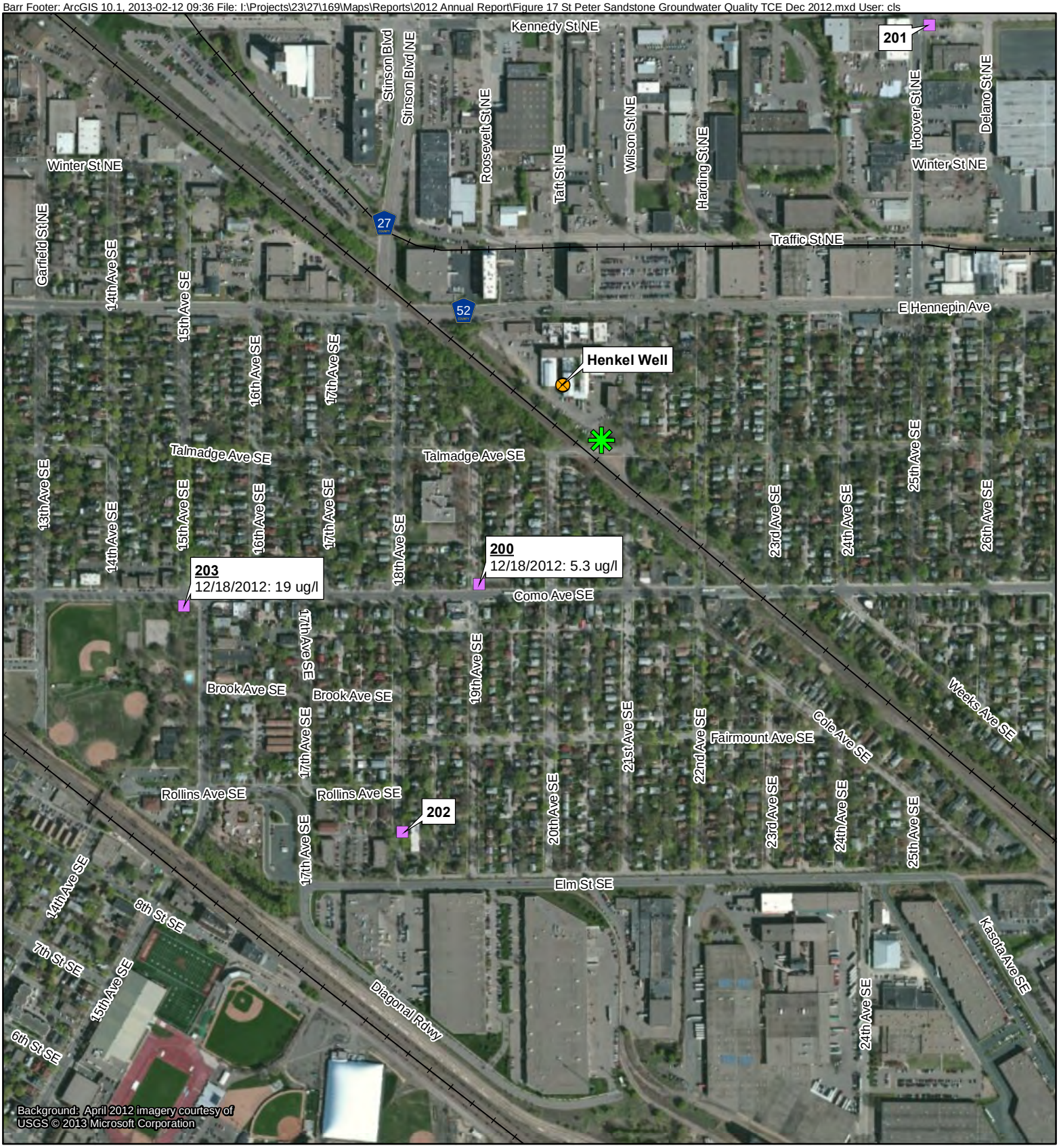
Feet

Figure 16
Magnolia Member Pump Out and Monitoring Wells
TCE Concentrations 1985 - 2012



NDs at zero.

2/21/2013 1:42 PM
P:\Mpls\23 MN\27\2327169\WorkFiles\DATA MGMT\2012 Tables\TCEcharts_01292013_LEB.xlsx



Former Disposal Site

Prairie du Chien Well

St. Peter Sandstone Well

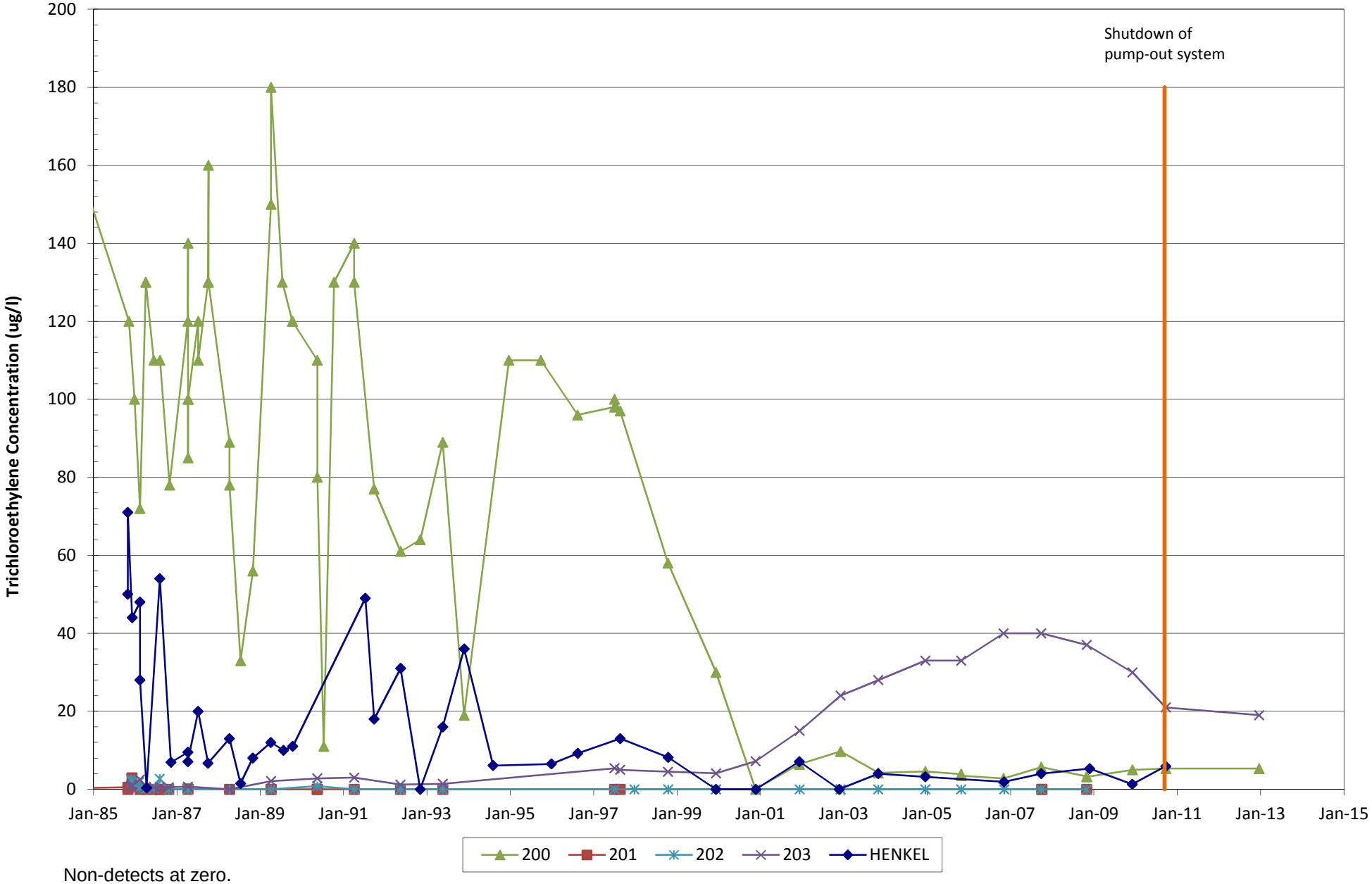
Figure 17

ST. PETER SANDSTONE AND PRAIRIE DU CHIEN/JORDAN GROUNDWATER QUALITY (TCE) - DECEMBER 2012
East Hennepin Avenue Site
Minneapolis, Minnesota

0 300 600 1,200

Feet

Figure 18
St. Peter Sandstone and Prairie du Chien/Jordan Wells
TCE Concentrations 1985 - 2012



Non-detects at zero.

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P:\Mpls\23 MN\27\2327169\WorkFiles\DATA MGMT\2012 Tables\TCEcharts_01292013_LEB.xlsx

Tables

Table 1

EXISTING AND HISTORIC WELLS
East Hennepin Avenue Site
Minneapolis, Minnesota

Name	Well Type	Unique Number	Status	Year Installed	Total Depth (feet bgs)	Depth of Top of Screen (feet bgs)	Depth of Bottom of Screen (feet bgs)	Top of Casing Elevation[1] (feet NAVD88)	Geologic Unit
2	Monitoring Well	196722	Active	1981	27	16	26	857.10	Glacial Drift
B	Monitoring Well		Active	1981	26.6	16.6	26.6	864.22	Glacial Drift
Q	Monitoring Well		Active	1984	36.5	13.9	23.9	850.21	Glacial Drift
S	Monitoring Well		Active	1984	31.2	14.5	24.5	848.08	Glacial Drift
T-2	Monitoring Well		Active	1984	26.6	12	22	849.34	Glacial Drift
V	Monitoring Well		Active	1984	35.7	15.6	25.6	838.52	Glacial Drift
W	Monitoring Well		Active	1984	20.5	7.1	17.1	830.78	Glacial Drift
X	Monitoring Well		Active	1984	27	9	19	842.72	Glacial Drift
109	Pump-Out Well	191913	Active	1984	42	18	42	859.83	Glacial Drift
110	Pump-Out Well	256171	Active	1983	37	17	37	852.19	Glacial Drift
111	Pump-Out Well		Active	1984	46	20	40	846.81	Glacial Drift
112	Pump-Out Well		Active	1984	41	16	36	841.19	Glacial Drift
113	Pump-Out Well		Active	1984	46.5	20	40	841.10	Glacial Drift
14	Monitoring Well	616615	Active	1998	66	60.5	65.5	858.75	Magnolia
QQ	Monitoring Well		Active	1982	59.3	57.3	59.3	859.08	Magnolia
TT	Monitoring Well		Active	1982	68.9	66.9	68.9	860.70	Magnolia
VV	Monitoring Well		Active	1982	68.3	66.3	68.3	859.70	Magnolia
MG-1	Pump-Out Well	463016	Active	1991	72	62	72	848.98	Magnolia
MG-2	Pump-Out Well	463017	Active	1991	72	60	72	861.95	Magnolia
200	Monitoring Well	403277	Active	1984	200	120	200	851.11	St. Peter Sandstone
201	Monitoring Well	191920	Active	1984	142	116.3	136.6	885.05	St. Peter Sandstone
202	Monitoring Well	191937	Active	1985	114	84	104	843.18	St. Peter Sandstone
203	Monitoring Well	409573	Active	1985	116	96	116	849.66	St. Peter Sandstone
Henkel	Former Industrial Supply	200815	Active	1947	404	215	404	unknown	Prairie du Chien/Jordan
1	Monitoring Well	196721	Abandoned	1981	28	18	28	--	Glacial Drift
3	Monitoring Well	180917	Abandoned	1982	23.5	13.5	23.5	--	Glacial Drift
4	Monitoring Well	180916	Abandoned	1982	23	13	23	--	Glacial Drift
5	Monitoring Well	180918	Abandoned	1982	24	14	24	--	Glacial Drift
106	Monitoring Well		Abandoned	1983	26	16	26	--	Glacial Drift
107	Monitoring Well	122237	Abandoned	1983	40	34	39	--	Glacial Drift
A	Monitoring Well	242970	Abandoned	1981	27	17	27	--	Glacial Drift
C	Monitoring Well	242971	Abandoned	1981	26.5	16.5	26.5	--	Glacial Drift
D	Monitoring Well		Abandoned	1981	21	11	21	--	Glacial Drift
E	Monitoring Well	242972	Abandoned	1981	26.5	16.5	26.5	--	Glacial Drift
F	Monitoring Well		Abandoned	1981	33	23	33	--	Glacial Drift
G	Monitoring Well		Abandoned	1981	24	13.5	23.5	--	Glacial Drift
H	Monitoring Well		Abandoned	1981	25	15	25	--	Glacial Drift
J	Monitoring Well	242973	Abandoned	1982	25.5	22.1	24.1	--	Glacial Drift
K	Monitoring Well	242974	Abandoned	1982	23.5	20	22	--	Glacial Drift
L	Monitoring Well	242975	Abandoned	1982	24.5	20.2	22.2	--	Glacial Drift
M	Monitoring Well	242976	Abandoned	1982	26	22.4	24.4	--	Glacial Drift
N	Monitoring Well		Lost	1982	26	22.2	24.2	--	Glacial Drift
P	Monitoring Well	242977	Abandoned	1982	25	21.5	23.5	--	Glacial Drift
R	Monitoring Well		Abandoned	1984	31	10	20	--	Glacial Drift
T	Monitoring Well		Abandoned	1984	30.1	7.2	17.2	--	Glacial Drift
U	Monitoring Well		Abandoned	1984	36	11.5	21.5	--	Glacial Drift
Y	Monitoring Well	242978	Abandoned	1984	31.5	12.3	22.3	--	Glacial Drift
Z	Monitoring Well	242979	Abandoned	1984	36.5	18.9	28.9	--	Glacial Drift
8	Monitoring Well	122236	Abandoned	1983	61.6	58	61.6	--	Carimona
9	Monitoring Well	122206	Abandoned	1983	61	57	61	--	Carimona
10	Monitoring Well	122202	Abandoned	1983	62	57	62	--	Carimona
11	Monitoring Well	122203	Abandoned	1983	52	48.2	52	--	Carimona
12	Monitoring Well	12204	Abandoned	1983	60	56.5	59.5	--	Carimona
13	Monitoring Well	191905	Abandoned	1984	50	47	50	--	Carimona
108	Monitoring Well	122205	Abandoned	1983	59.5	56.5	59.5	--	Carimona
RR	Monitoring Well		Abandoned	1982	53	50.4	52.4	--	Carimona
SS	Monitoring Well		Abandoned	1982	59.9	57.9	59.9	--	Carimona
UU	Monitoring Well		Abandoned	1982	61.8	59.8	61.8	--	Carimona
WW	Monitoring Well		Abandoned	1982	59.3	57.3	59.3	--	Carimona
YY	Monitoring Well	235547	Abandoned	1983	63	UNKN	UNKN	--	Carimona
II	Monitoring Well	242980	Abandoned	1981	64.2	54.2	64.2	--	Carimona/Magnolia
BB	Monitoring Well		Abandoned	1981	69.8	69.8	64.8	--	Magnolia
LL	Monitoring Well	242981	Abandoned	1982	56.3	54.3	56.3	--	Magnolia
OO	Monitoring Well		Abandoned	1982	60.5	58.5	60.5	--	Magnolia
PP	Monitoring Well	242982	Abandoned	1982	55	53	55	--	Magnolia
ZZ	Monitoring Well	191906	Abandoned	1984	56.5	52	56	--	Magnolia
GG	Monitoring Well		Abandoned	1981	69	59	69	--	Magnolia/Hidden Falls

bgs = below ground surface

NAVD88 = North American Vertical Datum of 1988

[1]Surveyed by Barr in 2012

Table 2

SOIL AND GROUNDWATER SAMPLING PLAN
East Hennepin Avenue Site
Minneapolis, Minnesota

Sampling Location	Estimated Total Depth	Targeted Sampling Interval	Soil Sampling		Groundwater Sampling					
			Quantity / Parameters		Estimated Temporary Well Screen Intervals (feet bgs)			Estimated Permanent Well Screen Interval		
ID	(feet bgs)		PID Field Screening (2 foot interval)	Attachment F VOCs*	Water Table	Mid-Aquifer	Bottom	(feet bgs)	Sampling Frequency	Parameters
Glacial Drift Monitoring Network										
301GS	25	water table	12	-	-	-	-	15-25	two events	Attachment F VOCs*
301GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	Attachment F VOCs*
302GS	25	water table	12	-	-	-	-	15-25	two events	Attachment F VOCs*
302GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	Attachment F VOCs*
303GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
303GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	VOCs
304GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
304SD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	VOCs
305GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
305GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	VOCs
306GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
307GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
307GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	VOCs
308GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
308GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	VOCs
309GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
309GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	VOCs
310GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
310GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	VOCs
311GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
311GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	VOCs
312GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
313GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
314GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
315GS	25	water table	12	-	-	-	-	15-25	two events	VOCs
315GD	40	base of glacial drift aquifer	20	-	-	-	-	35-40	two events	VOCs
2	27	water table	-	-	-	-	-	16-26	two events	VOCs
109	42	glacial drift aquifer	-	-	-	-	-	18-42	two events	VOCs
110	37	glacial drift aquifer	-	-	-	-	-	17-37	two events	VOCs
111†	46	glacial drift aquifer	-	-	-	-	-	20-40	two events	VOCs
112†	41	glacial drift aquifer	-	-	-	-	-	16-36	two events	VOCs
113†	46.5	glacial drift aquifer	-	-	-	-	-	20-40	two events	VOCs
B	26.6	water table	-	-	-	-	-	16.6-26.6	two events	VOCs
Q	36.5	water table	-	-	-	-	-	13.9-23.9	two events	VOCs
S	31.2	water table	-	-	-	-	-	14.5-24.5	two events	VOCs
T-2	26.6	water table	-	-	-	-	-	12-22	two events	VOCs
V	35.7	water table	-	-	-	-	-	15.6-25.6	two events	VOCs
W	20.5	water table	-	-	-	-	-	7.1-17.1	two events	VOCs
X	27	water table	-	-	-	-	-	9-19	two events	VOCs

Table 2

SOIL AND GROUNDWATER SAMPLING PLAN
East Hennepin Avenue Site
Minneapolis, Minnesota

Sampling Location	Estimated Total Depth	Targeted Sampling Interval	Soil Sampling		Groundwater Sampling					
			Quantity / Parameters		Estimated Temporary Well Screen Intervals (feet bgs)			Estimated Permanent Well Screen Interval		
ID	(feet bgs)		PID Field Screening (2 foot interval)	Attachment F VOCs*	Water Table	Mid-Aquifer	Bottom	(feet bgs)	Sampling Frequency	Parameters
On-Site Investigation - Geoprobe Borings / Temporary Wells										
DP-058	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*
DP-059	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*
DP-060	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*
DP-061	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*
DP-062	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*
DP-063	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*
DP-064	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*
DP-065	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*
DP-066	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*
DP-067	40	vadose zone, glacial drift aquifer	continuous	0-2	20-23	30-32	38-40	-	one time	Attachment F VOCs*

- None or not applicable

* Samples will be analyzed for specific VOC compounds listed in Attachment F in the original Response Order by Consent for this Site (MPCA, 1984) and using U.S. EPA Method 8260.

† These existing wells will be used for both the glacial drift monitoring and sentinel well monitoring. They will be sampled for TCE on the schedule described in the sentinel monitoring program.

Table 3

SENTINEL VAPOR PORT AND SENTINEL WELL SAMPLING PLAN
East Hennepin Avenue Site
Minneapolis, Minnesota

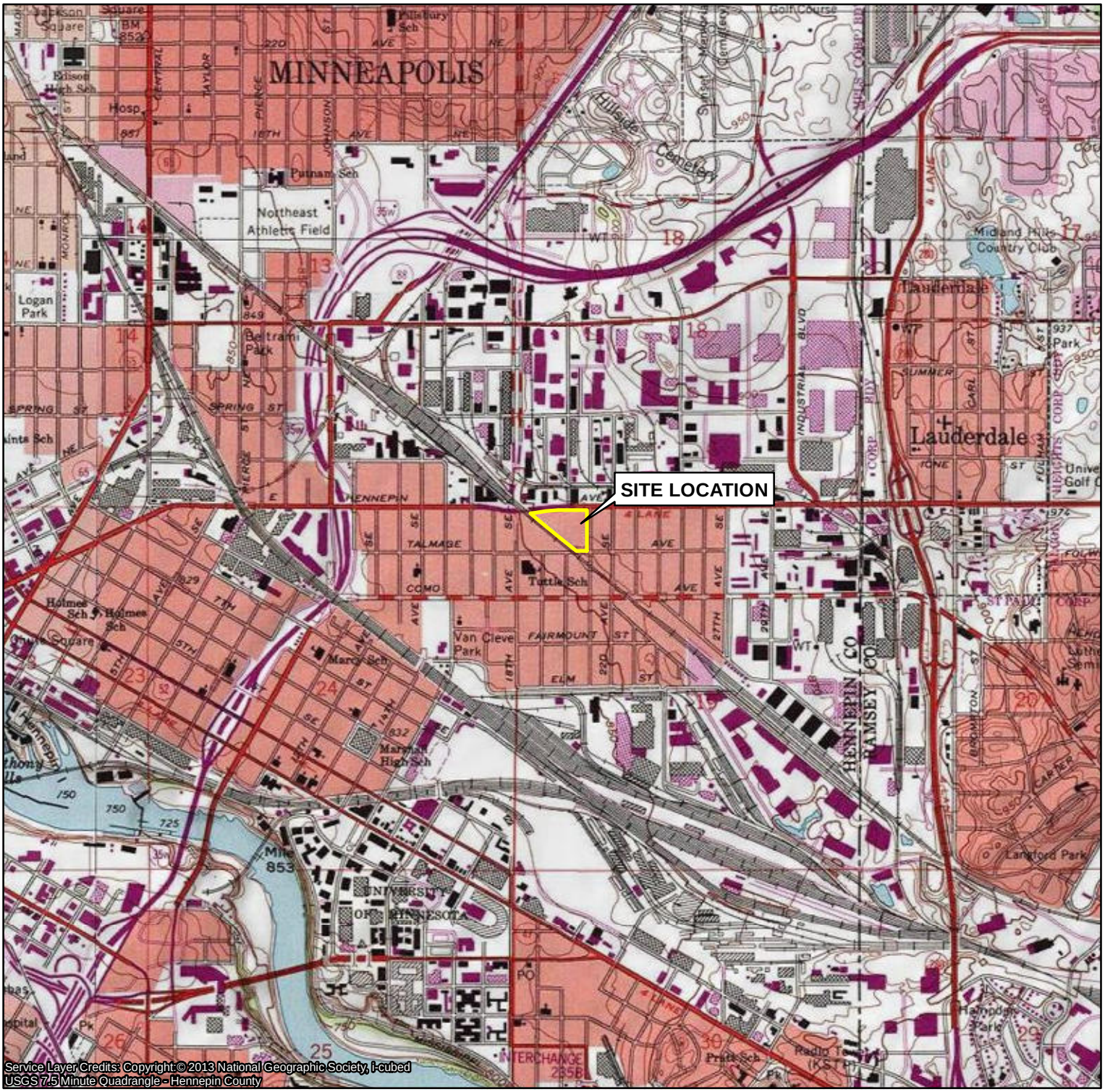
Sampling Location	Estimated Total Depth	Targeted Sampling Interval	Soil Sampling	Groundwater Sampling			Vapor Sampling		
ID	(feet bgs)		PID Field Screening (2 foot interval w/ HSA)	Estimated Well Screen Interval (feet bgs)	Sampling Frequency*	Parameter	Estimated Vapor Port Screen Interval (feet bgs)	Sampling Frequency*	Parameter
Sentinel Vapor Port Network									
SVP1	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP2	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP3	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP4	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP5	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP6	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP7	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP8	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP9	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP10	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP11	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP12	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP13	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP14	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP15	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP16	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP17	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP18	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP19	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP20	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP21	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP22	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP23	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
SVP24	9	vadose zone	continuous	-	-	-	8-9	quarterly	TCE
Sentinel Monitoring Well Network									
SMW1	25	water table	12	15-25	quarterly	TCE	-	-	-
SMW3	25	water table	12	15-25	quarterly	TCE	-	-	-
SMW6	25	water table	12	15-25	quarterly	TCE	-	-	-
SMW8	25	water table	12	15-25	quarterly	TCE	-	-	-
SMW11	25	water table	12	15-25	quarterly	TCE	-	-	-
SMW13	25	water table	12	15-25	quarterly	TCE	-	-	-
SMW16	25	water table	12	15-25	quarterly	TCE	-	-	-
SMW19	25	water table	12	15-25	quarterly	TCE	-	-	-
SMW22	25	water table	12	15-25	quarterly	TCE	-	-	-
SMW24	25	water table	12	15-25	quarterly	TCE	-	-	-
111†	46	fully penetrating	-	20-40	quarterly	TCE†	-	-	-
112†	41	fully penetrating	-	16-36	quarterly	TCE†	-	-	-
113†	46.5	fully penetrating	-	20-40	quarterly	TCE†	-	-	-

- None or not applicable

* Assumes one year of sampling starting in August 2014 following MPCA approval of work plan and installation of wells and vapor ports.

† These existing wells will be used for both the glacial drift monitoring and sentinel well monitoring.

Figures



2010 E Hennepin Avenue Site

0 2,000 4,000

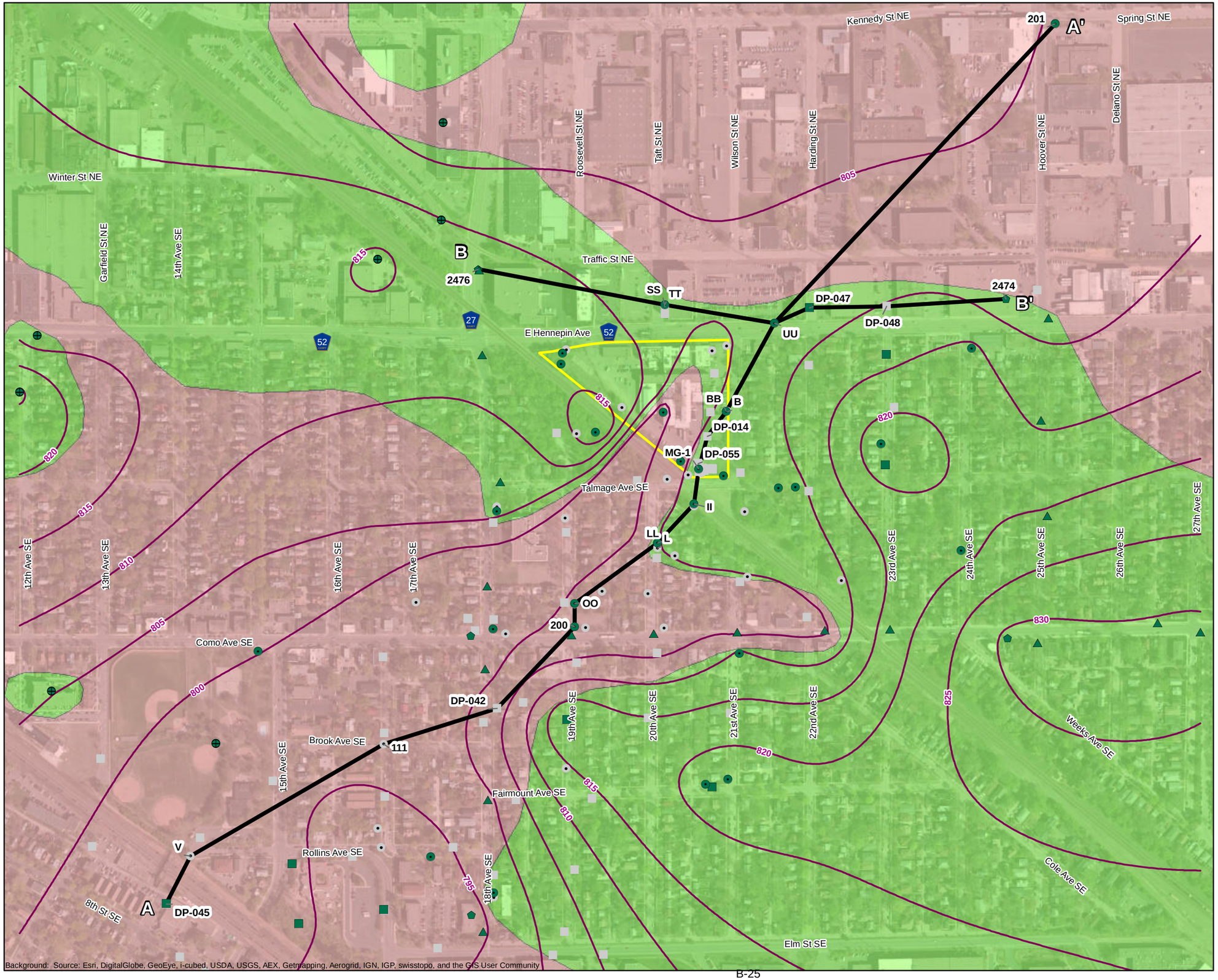
Feet

Note: Pink shaded areas in USGS map indicate residential areas.

BARR

Figure 1

SITE LOCATION
East Hennepin Avenue Site
Minneapolis, Minnesota



2010 E Hennepin Avenue

Data Points for Bedrock Elevation

- County Well Index Record
- MnDOT Boring
- Boring
- Well
- Storm Tunnel Manhole

Other Geology Data Points (not to bedrock)

- Direct Push Boring
- Monitoring and Pump-Out Wells

Cross Section Trace

Estimated Top of Bedrock Elevation (ft MSL)

Bedrock Type

- Shale (Decorah Shale, Unnamed Member)
- Carbonate (Decorah Shale, Carimona Member; Platteville Formation, Magnolia Member)

5-foot contour interval

Bedrock type modified from MGS Map M-194 (Mossler, 2013)

0 400 800

Feet

BARR

Figure 4

BEDROCK GEOLOGY AND TOPOGRAPHY
East Hennepin Avenue Site
Minneapolis, Minnesota

A
Southwest

A'
Northeast

Elevation, Feet (MSL)

880
870
860
850
840
830
820
810
800
790
780
770
760
750

DP-045
V
111
DP-042
200
OO*
L+/LL+
II+
MG-1
DP-55
DP-014
B/BB*
UU*
201

15th Ave. SE
18th Ave. SE
Como Ave. SE
Talmage Ave. SE
E. Hennepin Ave.
Hoover St. NE

FILL
ORGANIC SILT AND TOPSOIL*
FILL
PEAT
MARL
FILL
MARL
FILL / TOPSOIL
SAND AND GRAVEL
DECORAH SHALE, UNNAMED MEMBER
CLAY
DECORAH SHALE, CARIMONA MEMBER
PLATTEVILLE FORMATION, MAGNOLIA MEMBER
PLATTEVILLE FORMATION, HIDDEN FALLS MEMBER
PLATTEVILLE FORMATION, MIFFLIN MEMBER
PLATTEVILLE FORMATION, PECATONICA MEMBER
GLENWOOD FORMATION
ST. PETER SANDSTONE

728.1
648.1
(not to scale)

LEGEND

- Geologic Contact
- Inferred Geologic Contact
- Approximate Water table (dashed where inferred)
- Potentiometric Surface of St. Peter Sandstone (dashed where infereed)
- Monitoring Well Screen
- Soil Boring/Piezometer

0 500
Approximate Horizontal Scale in Feet
25X Vertical Exaggeration

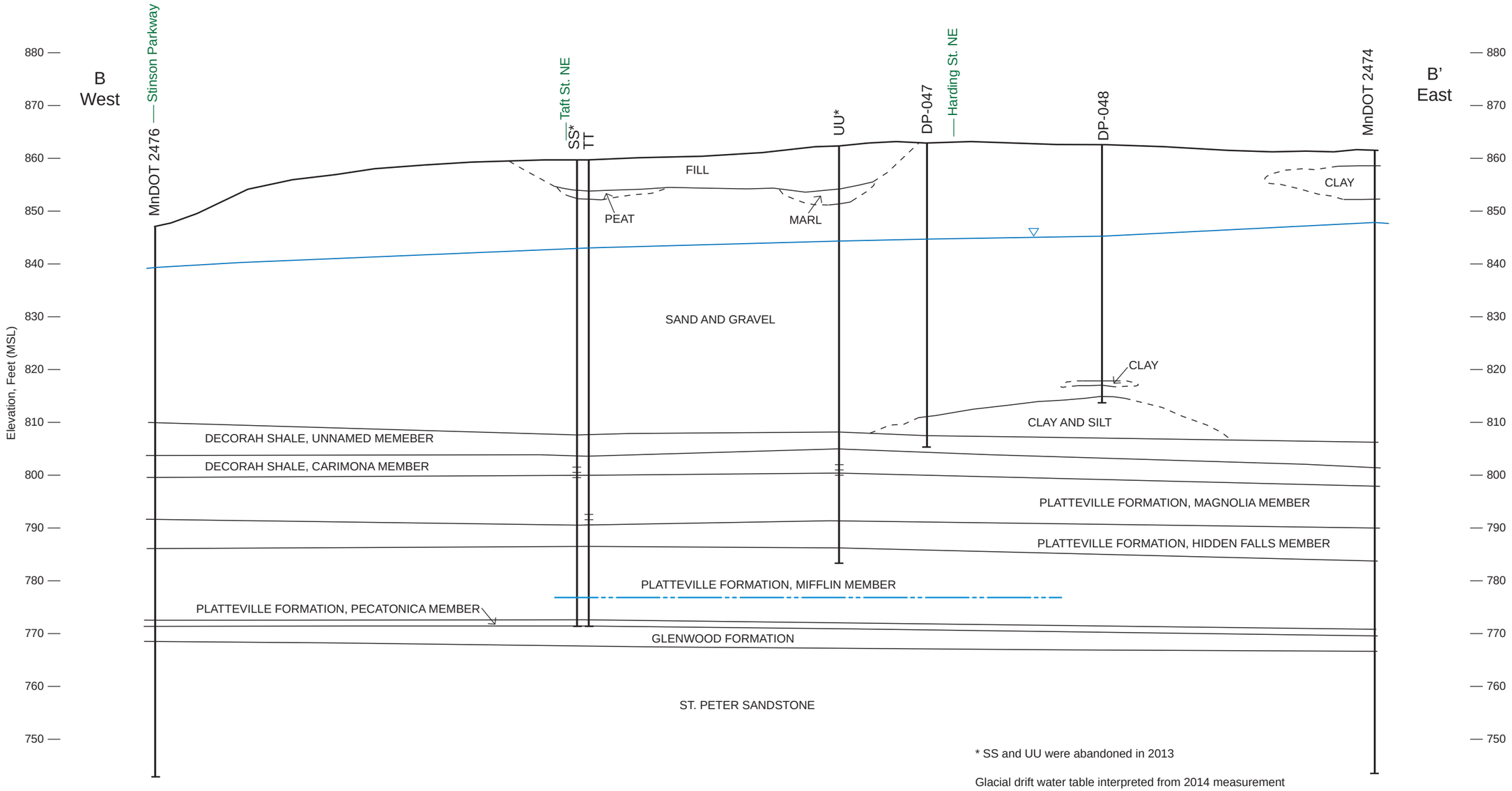
* BB, UU, OO were abandoned in 2013
+ L, LL, and II were abandoned in 1987

Glacial drift water table interpreted from 2014 measurements
St. Peter potentiometric surface interpreted from 2012 Annual Report Data

BARR

Figure 5

CROSS SECTION A-A'
East Hennepin Avenue Site
Minneapolis, Minnesota



* SS and UU were abandoned in 2013

Glacial drift water table interpreted from 2014 measurement

St. Peter potentiometric surface interpreted from 2012 Annual Report Data

LEGEND

- Geologic Contact
- Inferred Geologic Contact
- Approximate Water table (dashed where inferred)
- Potentiometric Surface of St. Peter Sandstone
- Monitoring Well Screen
- Soil Boring/Piezometer

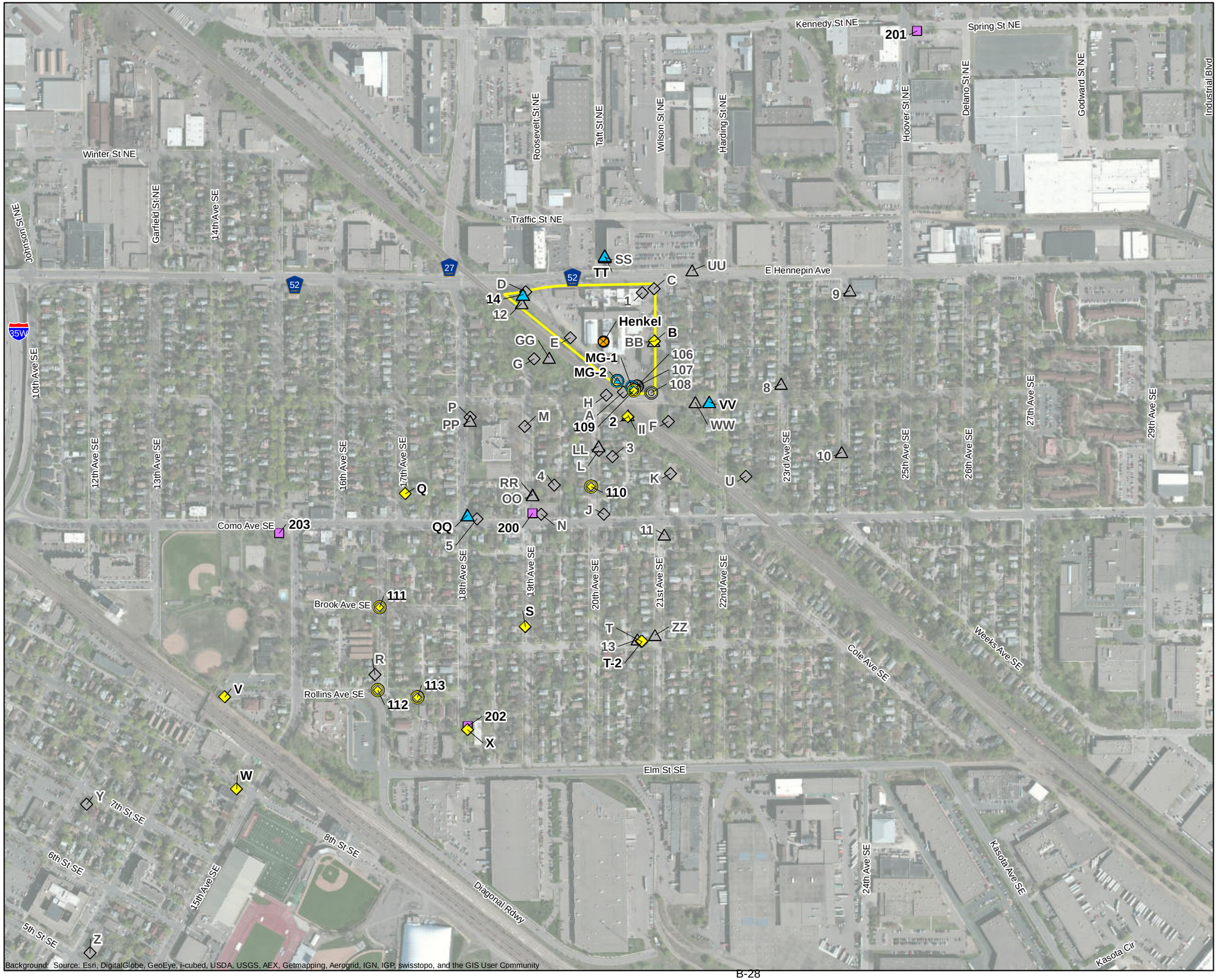
0 500

Approximate Horizontal Scale in Feet
25X Vertical Exaggeration

BARR

Figure 6

CROSS SECTION B-B'
East Hennepin Avenue Site
Minneapolis, Minnesota



Background: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2010 E Hennepin Avenue

Existing Monitoring Well Location

- Glacial Drift Well
- Glacial Drift Pump-Out Well
- Magnolia Member Well
- Magnolia Member Pump-Out Well
- Prairie du Chien - Jordan Well
- St. Peter Sandstone Well

Abandoned / Former Wells

- Monitoring Well, Carimona, Magnolia, and/or Hidden Falls
- Glacial Drift Well
- Carimona Pump-Out Well
- Glacial Drift Pump-Out Well

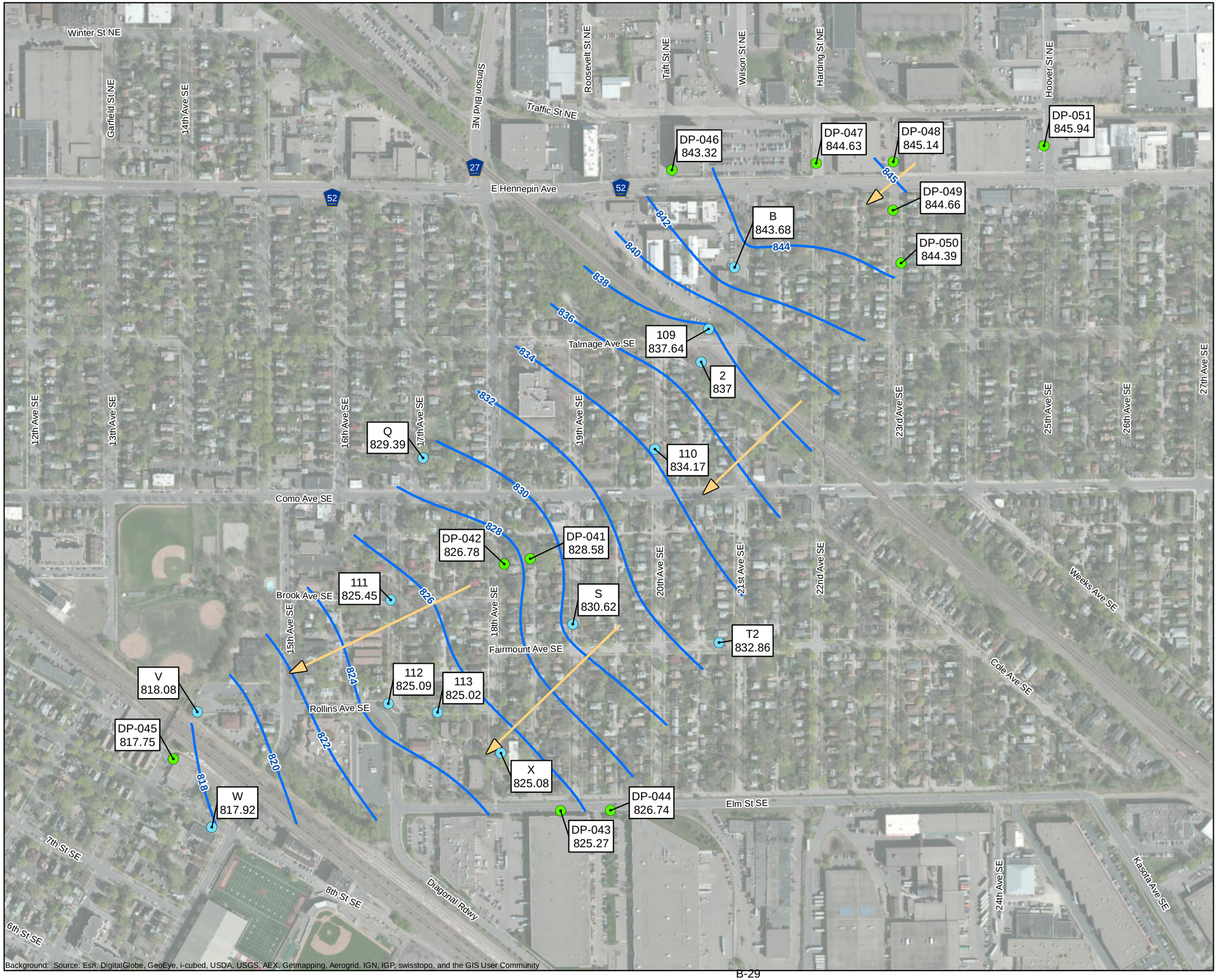
0 500 1,000

Feet

BARR

Figure 7

CURRENT AND FORMER WELLS
East Hennepin Avenue Site
Minneapolis, Minnesota



Geoprobe (Direct Push)

Groundwater Monitoring

Estimated Groundwater Flow Direction

Estimated Water Table Elevation Contour (ft MSL)

2-foot contour interval

Measuring point elevations DP-043 - DP-051 from survey; all other Geoprobe elevations taken from LiDAR (MN DNR, 2011)

All well measuring point elevations from survey

Geoprobe data collected 2/27/2014, 3/31/2014 - 4/4/2014
Well data collected 4/14/2014

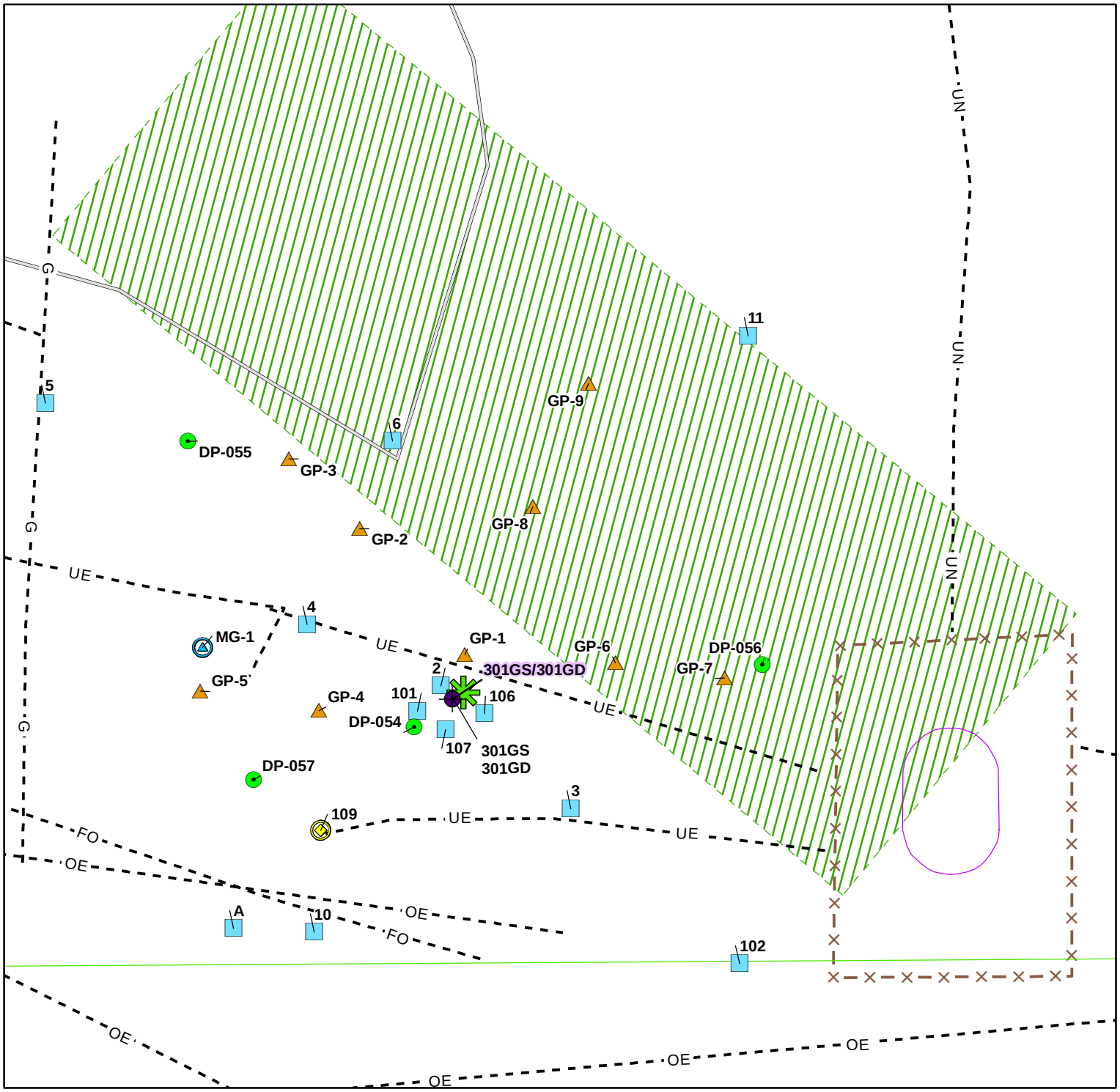
0 400 800

Feet

BARR

Figure 8

WATER TABLE CONTOURS
SPRING 2014
East Hennepin Avenue Site
Minneapolis, Minnesota



- Former Disposal Area
- Proposed Nested Well
- Previous Boring Locations (2014)
- Historic Borings / Wells

Current Wells

- Glacial Drift Pump-Out Well
- Magnolia Member Pump-Out Well
- 2001 Geoprobe Borings
- Property Boundary From 2010 Survey

Utility Lines

- FO - Fiber Optic
- G - Gas Line
- OE - Overhead Electric
- UE - Underground Electric
- UN - Unknown Utility
- Treatment Tower
- Treatment Tower Fence
- Former Tin Shed Location
- Parking Lot Edge

Note:
Boring locations approximate based on historical data

0 15 30
Feet

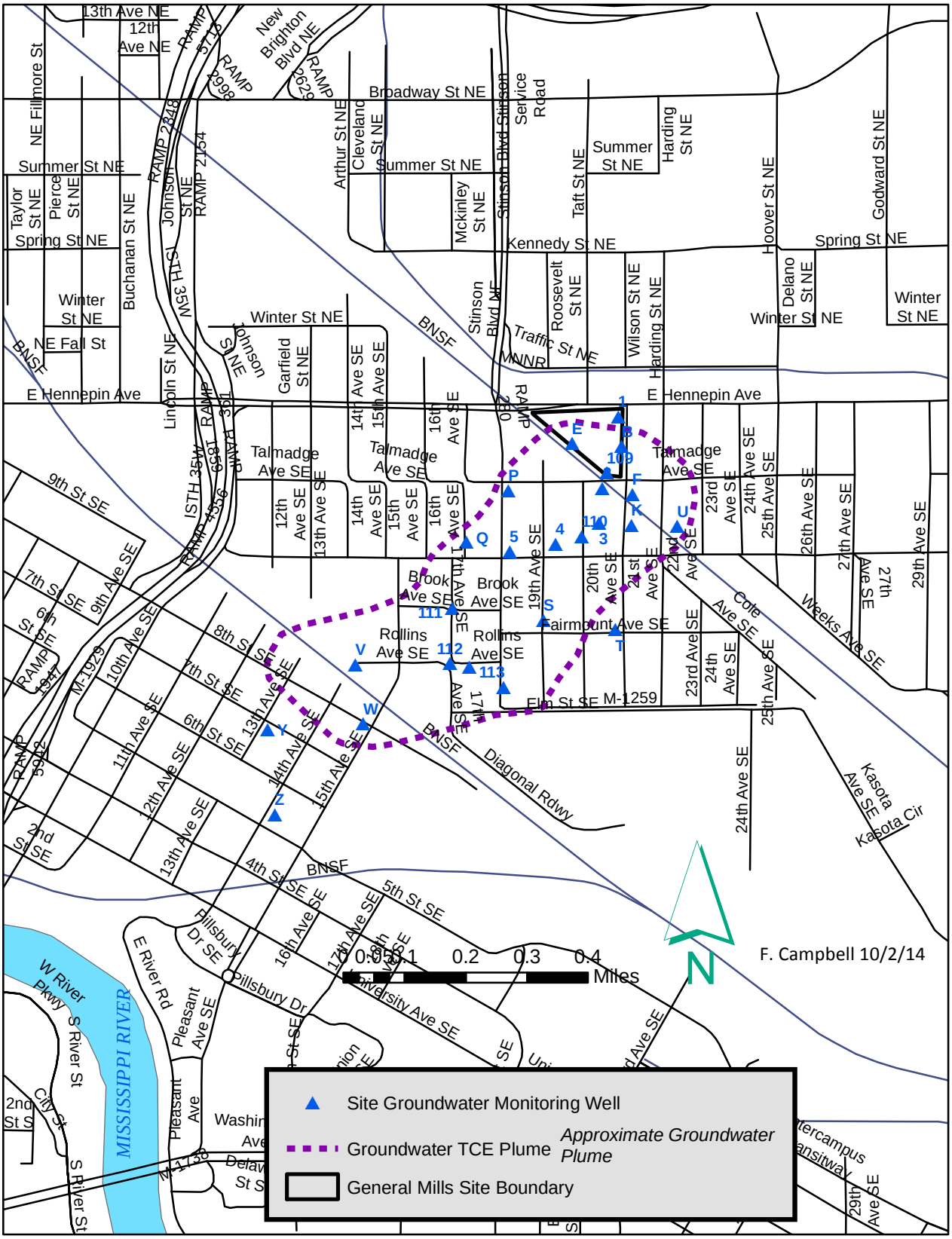
BARR

Figure 15

FORMER DISPOSAL AREA
INVESTIGATION LOCATIONS
East Hennepin Avenue Site
Minneapolis, Minnesota

Minnesota Pollution Control Agency

GENERAL MILLS SUPERFUND SITE



General Mills/Henkel Corporation Superfund Site
Minneapolis, Minnesota
10/2/2014

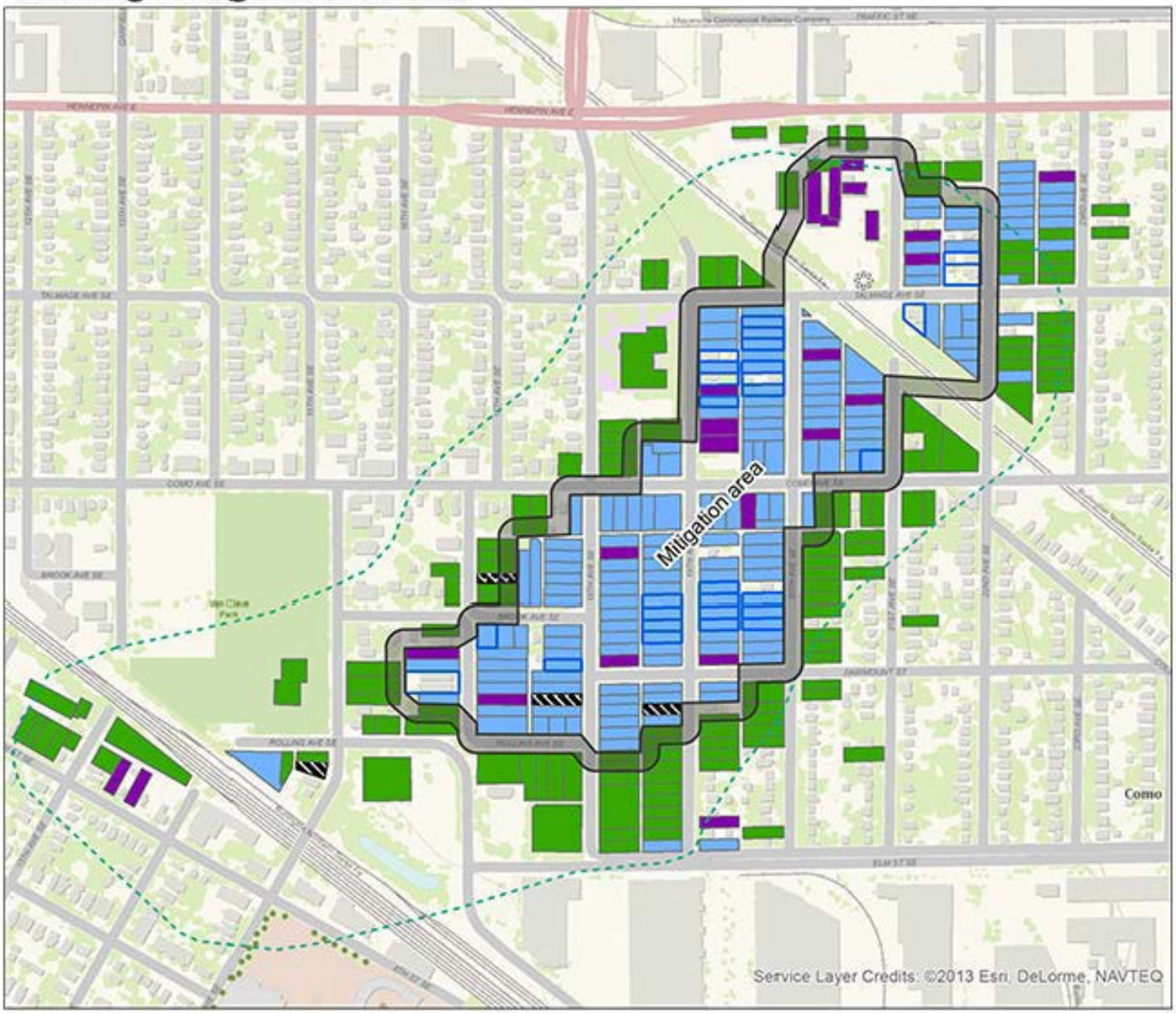
Groundwater Sample Point	Last TCE Concentration	Last Date Sampled	TCE Maximum (year)	Number of Sampling Events	Sealed
Q	<1.0 µg/L	12/17/2012	20 µg/L (1985)	33	
S	73 µg/L	12/19/2012	1,100 µg/L (1987)	30	
T	<1.0 µg/L	12/17/2012	<1.0 µg/L (2012)	33	
V	31 µg/L	12/17/2012	220 µg/L (1985)	48	
W	6.8 µg/L	12/17/2012	75 µg/L (1988)	47	
X	<1.0 µg/L	12/17/2012	5.0 µg/L (1985)	31	
B	110 µg/L	1/13/2012	1300 µg/L (1986)	18	
2	720 µg/L	12/12/1983	830 µg/L (1982)	2	
110	230 µg/L	1/17/2013	1500 µg/L (1985)	38	
111	<1.0 µg/L	1/16/2013	3.3 µg/L (2000)	34	
112	5.4 µg/L	1/16/2013	120 µg/L (1998)	32	
113	4.5 µg/L	12/18/2012	310 µg/L (2008)	36	
109	160 µg/L	12/18/2012	1,100 µg/L (1984)	43	
3	740 µg/L	11/22/1993	1,500 µg/L (1991)	27	X
4	77 µg/L	5/16/1990	440 µg/L (1985)	13	X
1	<0.5 µg/L	11/22/1993	27 µg/L (1983)	26	X
U	0.7 µg/L	5/18/1993	16 µg/L (1986)	12	X
E	290 µg/L	12/12/1983	290 µg/L (1983)	1	X
F	94 µg/L	12/6/1983	94 µg/L (1983)	1	X
K	120 µg/L	12/9/1983	120 µg/L (1983)	1	X
P	0.4 µg/L	12/2/1983	0.4 µg/L (1983)	1	X
5	260 µg/L	12/6/1983	260 µg/L (1983)	2	X
Y	<0.2 µg/L	10/23/1986	0.5 µg/L (1986)	8	X
Z	<0.2 µg/L	10/23/1986	<0.8 µg/L (1985)	8	X

Data in this table were taken from "2012 Annual Report East Hennepin Avenue Site Minneapolis, Minnesota" dated February 2013 and prepared for General Mills, Inc. by Barr Engineering Co

For additional information about wells located near the General Mills Superfund site, please see "2012 Receptor Well Survey East Hennepin Avenue Site, Minneapolis, Minnesota", dated February 11, 2013 and prepared for General Mills, Inc. by Barr Engineering Co.

Soil Vapor: SE Hennepin Ave – Minneapolis

Building Mitigation Status



Minnesota Pollution Control Agency

General Mills/Henkel Corp. Superfund Site historic disposal area

Approximate groundwater TCE plume

No mitigation required.

Mitigation system required - not yet installed.

Vapor mitigation system has been installed.

Mitigation will be offered but is not required based on sampling results.

Sampling access denied.

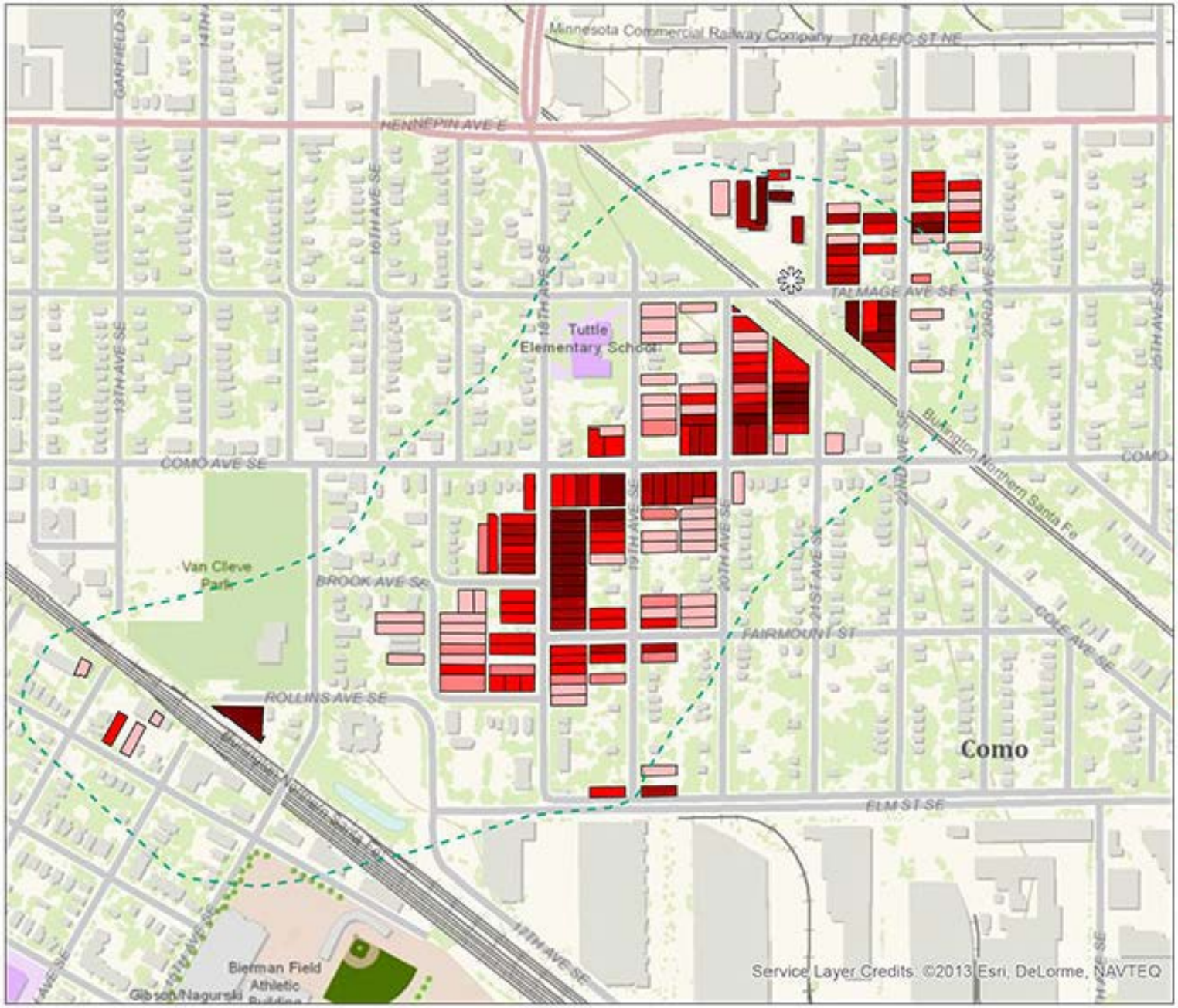
Soil gas monitoring area
Long-term soil gas monitoring will be conducted in the public right-of-way.

All properties within the mitigation area will be offered a vapor mitigation system.

*Sampling status current as of July 23, 2014, 1:30 p.m.

Soil Vapor: SE Hennepin Ave – Minneapolis

Sub-slab Vapor Sampling Results Greater than 20 µg/m^3



Minnesota Pollution Control Agency

General Mills/Henkel Corp. Superfund Site historic disposal area

Approximate groundwater TCE plume

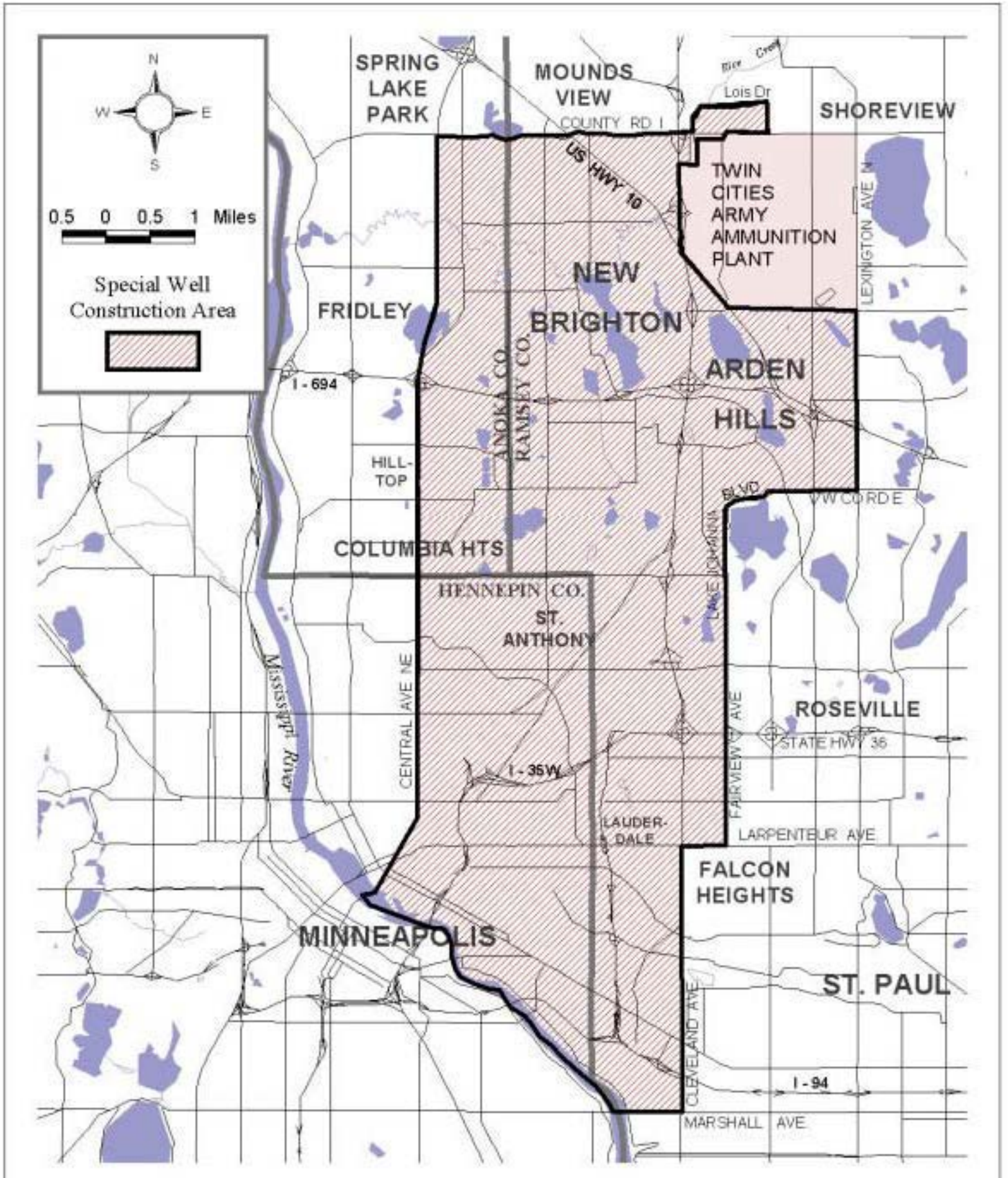
Sub-slab TCE vapors in micrograms per cubic meter (µg/m^3)

- 20 - 60 µg/m^3
- 60 - 100 µg/m^3
- 100 - 500 µg/m^3
- 500 - 2000 µg/m^3
- > 2000 µg/m^3

Mitigation is required for residential properties with a sampling result greater than 20 µg/m^3 and industrial properties with a sampling result greater than 60 µg/m^3.

*Sampling status current as of July 23, 2014, 1:30 p.m.

Special Well Constructon Area
Twin Cities Army Ammunition Plant



Appendix C

Community Notification and Response

MPCA webpage notification

Brenda Winkler E-Mail to SECIA with Notification for posting on SECIA webpage

Star Tribune Public Notice

Minnesota Daily Public Notice

SECIA Response Letter

MPCA Response Letter to SECIA

Judith Treise Comment Letter

General Mills Comment Letter

MPCA Response Letter to General Mills

Vapor intrusion

IN THIS SECTION

- Soil vapor: SE Hennepin Ave – Minneapolis
- MPCA investigates vapor intrusion near contaminated sites
- Maps of TCE soil vapor in the Como neighborhood of Minneapolis
- Site information for TCE soil vapor in the Como neighborhood of Minneapolis
- Five-Year Review of TCE soil vapor in the Como neighborhood of Minneapolis
- Additional information for property owners in the SE Hennepin Avenue soil vapor area

RELATED TOPICS

Perfluorochemicals (PFCs)

Five-Year Review of TCE soil vapor in the Como neighborhood of Minneapolis

The Minnesota Pollution Control Agency (MPCA), with oversight from the U.S. Environmental Protection Agency, is preparing a 2014 Five-Year Review. The purpose of the Review is to assess the groundwater cleanup and ensure that human health and the environment remain protected at the General Mills/Henkel Corporation NPL Site (the "Site") located in Minneapolis, Minnesota.

Site background

From 1947 through 1977 General Mills, Inc. (GMI) conducted chemical research at the site. Workers dumped waste volatile organic compound (VOC) solvents containing trichloroethylene (known as TCE), in a soil absorption pit from 1947 until 1962. GMI investigated the absorption pit in 1981, and reported to the MPCA that there was contamination of soil and groundwater in the absorption pit area.

An October 23, 1984, Response Order by Consent between the MPCA and General Mills provides the basis for remedial activities at the Site. The groundwater cleanup remedy consisted of a groundwater pump-out system to control the groundwater contaminant plume as well as remediate contaminated groundwater. Extraction and treatment of impacted groundwater to stabilize the plume of VOC contamination began in 1985 and ran until 2010.

In October 2013 the MPCA received soil gas data indicating potential soil gas vapor intrusion into buildings in the vicinity of the site. The potential for vapor intrusion was not addressed in the 1984 Response Order by Consent and is not part of this Five-Year Review.

Site documents

- 2003 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15g)
- 2004 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15h)
- 2005 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15i)
- 2006 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15j)
- 2007 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15k)
- 2008 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15l)
- 2009 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15m)
- 2010 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15n)
- Groundwater Pump-out System Shutdown Summary Report and 2011 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15o)
- 2012 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15p)
- 2013 Annual Report - East Hennepin Ave. Site, Minneapolis (c-s3-15q)
- 2013 Monitoring Well Sealing Report - Hennepin Ave. Site, Minneapolis (c-s3-15r)
- Summary of Phase 2B Soil Vapor Results and Path Forward - East Hennepin Ave. Site, Minneapolis (6-20-12) (c-s3-15s)
- Quality Assurance Project Plan, Sub-Slab Sampling - East Hennepin Avenue Study Area (c-s3-15t)
- Five Year Review 1994 (c-s3-15u)
- Five Year Review 1999 (c-s3-15v)
- Five Year Review 2004 (c-s3-15w)

Community involvement

The Five-Year Review report will be complete in September 2014. The community can contribute by providing comments regarding any work done at the site from 1981-2014. **Comments are accepted through June 20, 2014. Please call, email or mail your comments to:**

David Scheer
MPCA
520 Lafayette Road North
St. Paul, MN 55155
Email: dave.scheer@state.mn.us
Phone: 651-757-2693

Last modified on June 13, 2014 10:18

RELATED LINKS

MPCA

- TMDL projects and staff contacts
- Lake Pepin Excess Nutrients: TMDL Project
- Assessment of Contaminated Sediments Web References
- Remediation of Contaminated Sediments Web References

External

- U.S. Environmental Protection Agency - Household Hazardous Waste
- U.S. Environmental Protection Agency - Cleanup
- U.S. Environmental Protection Agency - Waste

CONNECT WITH US

Brenda Winkler

From: Brenda Winkler
Sent: Tuesday, May 27, 2014 1:13 PM
To: 'Ricardo@comogreenvillage.info'
Cc: Tim Grape; Scheer, Dave (MPCA)
Subject: 5YR_public notice FINAL for posting.docx
Attachments: 5YR_public notice FINAL for posting.docx

Hello Ricardo,

On behalf of the MPCA, Bay west is placing a 5 year review public notice in the Star & Tribune and the Minnesota Daily with a comment period extending to July 5, 2014. Could you please put this notice on your community website.

Please let me know if you have any questions.

Best Regards,
Brenda

Brenda Winkler, PG
Senior Project Manager
direct: 406-879-3002 · cell: 651-341-3258
brendaw@baywest.com

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PUBLIC NOTICE: Announcement of a Five-Year Review for the General Mills/Henkel Corporation National Priorities List (NPL) Site

The Minnesota Pollution Control Agency (MPCA), with oversight from the U.S. Environmental Protection Agency, is preparing a 2014 Five-Year Review. The purpose of the Review is to assess the groundwater cleanup and ensure that human health and the environment remain protected at the General Mills/Henkel Corporation NPL Site (the "Site") located in Minneapolis, Minnesota.

Site background

From 1947 through 1977 General Mills, Inc. (GMI) conducted chemical research at the site. Workers dumped waste volatile organic compound (VOC) solvents containing trichloroethylene (known as TCE), in a soil absorption pit from 1947 until 1962. GMI investigated the absorption pit in 1981, and reported to the MPCA that there was contamination of soil and groundwater in the absorption pit area.

An October 23, 1984 Response Order by Consent between the MPCA and General Mills provides the basis for remedial activities at the Site. The groundwater cleanup remedy consisted of a groundwater pump-out system to control the groundwater contaminant plume as well as remediate contaminated groundwater. Extraction and treatment of impacted groundwater to stabilize the plume of VOC contamination began in 1985 and ran until 2010.

In October 2013 the MPCA received soil gas data indicating potential soil gas vapor intrusion into buildings in the vicinity of the site. The potential for vapor intrusion was not addressed in the 1984 Response Order by Consent and is not part of this Five-Year Review.

Community involvement

The Five Year Review report will be complete in September, 2014. The community can contribute by providing comments regarding any work done at the site from 1981-2014. Comments are accepted through July 5, 2014. Please call, email or mail your comments to:

David Scheer
MPCA
520 Lafayette Road North
St. Paul, MN 55155
Email: dave.scheer@state.mn.us
Phone: 651.757.2693

Additional information on the site, including historical documents, can be found online at www.pca.state.mn.us/9akx8ry and at the Minnesota Pollution Control Agency in St Paul.

Classified Index

107 Home & Commercial Services

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Parents are urged to exercise caution in arranging child day care. Be sure to investigate references. Facilities caring for children from more than one family must be licensed.

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RESTAURANT, Motel & Banquet Hall: NE South Dakota in Webster. The only event center in town has 23 rooms, a new bar, restaurant/banquet hall w/300 capacity. This business is busy yr-round & has the financial books to prove it. Sitting in the center of a fishing & hunting community keeps business booming w/outdoorsmen. Great oppty for avid hunters & fishermen. Oppty for Guide Service. Call Dakota Properties 605-380-8240. Equal Housing Oppty

SUPPER CLUB WELL-ESTABLISHED, on the shores of Lake superior in Washburn, WI. Retiring after 41 years. Make offer. Call 262-939-3905 Deanna

203 General Notices

IN THE CIRCUIT COURT FOR THE STATE OF OREGON
IN AND FOR THE COUNTY OF MULTNOMAH

JPMORGAN CHASE BANK, NATIONAL ASSOCIATION, SUCCESSOR BY MERGER TO CHASE HOME FINANCE LLC, its successors in interest and/or assigns,
Plaintiff,
v.
EDWARD M. CESPEDES aka Edward Martin Cespedes Rogriguez; ELIZABETH G. CESPEDES nka Elizabeth Grace Martin; BANK OF AMERICA, NA; and OCCUPANTS OF THE PREMISES,
Defendants.
Case No. 130608954
SUMMONS BY PUBLICATION
TO THE DEFENDANTS: EDWARD M. CESPEDES AKA EDWARD MARTIN CESPEDES ROGRIGUEZ:
In the name of the State of Oregon, you are hereby required to appear and answer the complaint filed against you in the above-entitled Court and cause on or before the expiration of 30 days from the date of the first publication of this summons. The date of first publication in this matter is May 25, 2014. If you fail timely to appear and answer, plaintiff will apply to the above-entitled court for the relief prayed for in its complaint. This is a judicial foreclosure of a deed of trust in which the plaintiff requests that the plaintiff be allowed to foreclose your interest in the following described real property:
PARCEL 1, PARTITION PLAT 2000-043, IN THE CITY OF PORTLAND, COUNTY OF MULTNOMAH AND STATE OF OREGON;
Commonly known as: 11016 Southwest 45th Avenue, Portland, OR 97219.
NOTICE TO DEFENDANTS:
READ THESE PAPERS CAREFULLY!
A lawsuit has been started against you in the above-entitled court by JPMorgan Chase Bank, National Association, successor by merger to Chase Home Finance LLC, plaintiff. Plaintiff's claims are stated in the written complaint, a copy of which was filed with the above-entitled Court.
You must "appear" in this case or the other side will win automatically. To "appear" you must file with the court a legal document called a "motion" or "answer." The "motion" or "answer" (or "reply") must be given to the court clerk or administrator within 30 days of the date of first publication specified herein along with the required filing fee. It must be in proper form and have proof of service on the plaintiff's attorney or, if the plaintiff does not have an attorney, proof of service on the plaintiff.
If you have any questions, you should see an attorney immediately. If you need help in finding an attorney, you may contact the Oregon State Bar's Lawyer Referral Service online at www.oregonstatebar.org or by calling (503) 684-3763 (in the Portland metropolitan area) or toll-free elsewhere in Oregon at (800) 452-7636.
This summons is issued pursuant to ORCP 7.
RCO LEGAL, P.C.
Alex Gund, OSB #114067
agund@rcolegal.com
Attorney for Plaintiff
511 SW 10th Ave., Ste. 400
Portland, Oregon 97205
T: 503-977-7840; F: 503-977-7963

PUBLIC NOTICE: ANNOUNCEMENT OF A FIVE-YEAR REVIEW FOR THE GENERAL MILLS/HENKEL CORPORATION NATIONAL PRIORITIES LIST (NPL) SITE

The Minnesota Pollution Control Agency (MPCA), with oversight from the U.S. Environmental Protection Agency, is preparing a 2014 Five-Year Review. The purpose of the Review is to assess the groundwater cleanup and ensure that human health and the environment remain protected at the General Mills/Henkel Corporation NPL Site (the "Site") located in Minneapolis, Minnesota.

Site background
From 1947 through 1977 General Mills, Inc. (GMI) conducted chemical research at the site. Workers dumped waste volatile organic compound (VOC) solvents containing trichloroethylene (known as TCE), in a soil absorption pit from 1947 until 1962. GMI investigated the absorption pit in 1981, and reported to the MPCA that there was contamination of soil and groundwater in the absorption pit area.

An October 23, 1984 Response Order by Consent between the MPCA and General Mills provides the basis for remedial activities at the Site. The groundwater cleanup remedy consisted of a groundwater pump-out system to control the groundwater contaminant plume as well as remediate contaminated groundwater. Extraction and treatment of impacted groundwater to stabilize the plume of VOC contamination began in 1985 and ran until 2010.

In October 2013 the MPCA received soil gas data indicating potential soil gas vapor intrusion into buildings in the vicinity of the site. The potential for vapor intrusion was not addressed in the 1984 Response Order by Consent and is not part of this Five-Year Review.

Community involvement
The Five Year Review report will be complete in September, 2014. The community can contribute by providing comments regarding any work done at the site from 1981-2014. Comments are accepted through July 7, 2014. Please call, email or mail your comments to:
David Scheer
MPCA
520 Lafayette Road North
St. Paul, MN 55155
Email: dave.scheer@state.mn.us
Phone: 651.757.2693

Additional information on the site, including historical documents, can be found online at www.pca.state.mn.us/9akx8ry and at the Minnesota Pollution Control Agency in St Paul.

203 General Notices

NOTICE OF PUBLIC HEARING ON A HOUSING PROGRAM AND THE ISSUANCE OF MULTIFAMILY HOUSING REVENUE OBLIGATIONS TO FINANCE A MULTIFAMILY HOUSING DEVELOPMENT UNDER MINNESOTA STATUTES, CHAPTER 462C

NOTICE IS HEREBY GIVEN that the Community Development & Regulatory Services Committee of the City Council of the City of Minneapolis (the "City") will hold a public hearing, on behalf of the City, on Tuesday, June 17, 2014, on or after 1:30 p.m. in the Council Chambers (Room 317) at City Hall in the City with respect to the proposed issuance of conduit revenue obligations (the "Revenue Obligations") under Minnesota Statutes, Chapter 462C, as amended (the "Act"), to finance the acquisition of land and the construction of a 45-unit, multifamily, rental-housing development, and facilities functionally related and subordinate thereto, to be located at 1823 Penn Avenue North and 2201-2221 Golden Valley Road in the City (the "Project"). At the public hearing, the Council will consider a resolution approving a housing program prepared under the terms of the Act with respect to the Project (the "Housing Program") and granting approval to the issuance of the Revenue Obligations under the Act to finance the Project. The face amount of the Revenue Obligations proposed to be issued to finance the Project is presently estimated to be $5,600,000.

The Project proposed to be financed under the Housing Program is to be owned and operated by Commons at Penn Limited Partnership, a Minnesota limited partnership, or a related or successor organization (the "Borrower"). The Revenue Obligations will be issued by the City and will constitute limited obligations of the City payable solely from the revenues pledged to the payment thereof. The Revenue Obligations will not constitute general or moral obligations of the City and will not be secured by the taxing powers of the City.

All parties who appear before the Community Development & Regulatory Services Committee on the date and at the time set forth above shall be given an opportunity to express their views with respect to the Project, the Housing Program, and the proposal to issue the Revenue Obligations to finance the Project.

For sign language interpreting call 612-673-2626TTY. For further information, please contact Tiffany Glasper, 612-673-5221.

Dated: 6/1/2014

NOTICE TO DISADVANTAGED BUSINESSES SAK Construction LLC, 864 Hoff Road, O'Fallon MO 63366(Phone 636-385-1000) is seeking disadvantaged businesses for the Burns/Park Sewer Lining in St. Paul, MN for subcontracting opportunities in the following areas: Sewer Line Cleaning, CCTV Inspection, Bypass Pumping and Traffic Control. All disadvantaged businesses should contact, IN WRITING, (certified letter, return receipt requested), Andrea Carlstrom to discuss the subcontracting opportunities. All negotiations must be completed prior to the bid opening on June 11, 2014. SAK will select the subcontract bids from the lowest responsive, responsible bidders.

JUDICIAL NOTICE TO CHRIS DANIELS Last known adds. 13620 Duluth Ave, AV 55124. @ Dakota district ct. June 19th 9 am. file # 19AV-CO-14-267

214 Proposals for Bids

CO-LOCATED MENTAL HEALTH PROVIDER
THE HUDSON SCHOOL DISTRICT
is seeking proposals from qualified providers to deliver onsite, co-located mental health services to students in the District. Request of Proposal specifications are available through the Student Services Department.
Please contact Anthony Mayer via email: mayerag@hudson.k12.wi.us
Materials must be received by July 3, 2014.

226 Adult Entertainment

WILD NASTY BABES!!! 18+
Hot Live 1 on 1 1-800-350-4323

MEET HOT MEN BROWSE ADS FREE!
952-938-8700 FREE Code 2558, 18+

302 Garage Sales Minneapolis

SOUTH MINNEAPOLIS
HUGE multi family sale - clothes, home goods, games, furniture, collectibles. 9-3 Sat & Sun, 4704 13th Ave S. 55407

307 Garage Sales St. Paul

SOUTH ST. PAUL 855 24TH AVE N.
Fri, Sat. & Sun. through July (also Memorial Day) 10 am to 6 pm. 4 generations of antiques, tools, furniture, baby clothing & toys, art & much more!

313 Auctions/Liquidations

¢★★★★★★★★★★★★★★★★★★
MPLS IMPOUND LOT
JUNE 5, 2014 PUBLIC AUCTION
PUBLIC AUCTION
AUCTION
MINNEAPOLIS EQUIPMENT DIVISION
(4) 07 Ford Crown Vic 75-88m
(2) 09 Ford Crown Vic 91-101m
(1) 08 Ford Crown Vic 81m
(1) 13 Ford Explorer 26m (totaled)
(1) 06 Pont G6 90m
(1) 84 GMC TC31003 50m
(1) 03 Chev Silverado w/plow 52m (no reverse)

TRANSPORTATION MAINTENANCE
(1) 96 TORO Groundsmaster 325-D 72"deck, w/snowblower att - 2041 hrs
(1) 97 TORO Groundsmaster 223-D 62"deck - 843 hrs

SOLID WASTE AND RECYCLING
(1) 90 Chev G/30 19-pass Mini Bus 191m
(1) 99 Chev Astrovan AWD 76m

SEIZURE VEHICLES WITH TITLES
2001 AUDI 64 DR BLUE
2002 CHEV MONTE CARLO 2DR RED
1999 CADI DEVILLE 4DR GOLD
2007CHRY 300 TOURING 4DR BLUE
2004 DODGE DURANGO 4DR SILVER
2001 LINC TOWN CAR 4DR GREY

AVAILABLE FOR PUBLIC AUCTION
50+ VEHICLES
SEE WWW.SELLERUSA.COM

51 N. Colfax, 2 Blocks So of Glenwood Ave **THURS. 06/05/14**, 10:30 AM. Bidding #'s start being sold at 8AM. To obtain Bid # for admission, a fee of $5 Cash is required along w/valid drivers lic or state ID issued within United States. Lot open for vehicle inspection @ 9AM. No One under 18 Admitted. Mark Friederichs Lic #27-20; Mpls, MN
★★★★★★★★★★★★★★★★★★

313 Auctions/Liquidations

MUSEUM QUALITY NATIVE AMERICAN COLLECTIBLES AUCTION
From the Kent B. Wintersteen Collection
SATURDAY, JULY 5; 10:00 A.M.
RAMKOTA INN & CONVENTION CENTER, SIOUX FALLS, SD
The family of the late Kent B. Wintersteen will be selling at auction to the highest bidder approx 260 lots of quality Native American collectibles that have been on display at the Heritage Hall Museum in Freeman SD. These items are just a portion of Kent's vast collection & include many unique & very fine quality items. Kent was extremely fond of the beadwork of the Northern Plains Indians & his collection reflects this passion. Items include, but are not limited to: Native American apparel & moccasins; beaded bags-purses-pouches-sheaths- belts and saddle blanket; 2 headdresses; tomahawks, pipes & canes; many historical photographs- including Rineharts; many very fine Navajo weavings. Request a complete list by email kenw@gwtc ; or call 605-387-5180 or 605-999-0832. A link to pictures via Dropbox avail by request or pictures can be viewed on Wintersteen Auction Facebook page. Auctioneers/Clerks: Ken Wintersteen, Olivet, SD 605-999-0834; Bryan Fodness, Hardwick, MN 507-227-8334. Terms are cash/credit/debit. (3% processing fee applies to card transaction).

Industrial Online Auctions
MORI SEIKI FMS LINE
4-HMC Machining Line
19.7" Pallets - Pallet Car
TOOL & DIE SHOP
(2) Enshu DT-C VMC's
Mills - Grinders - Welders
Inspection - Tools - More!
COMPOSITE MOLDING SHOP
PaR 5-Axis CNC Router
Faro Xi Laser Tracker
'04 Fanuc R2000iA Robot
Mat Handling - Inspect - More!
(8) CURRENT & UPCOMING SALES
www.hoffonlineauctions.com
612-521-5500

RESTAURANT EQUIPMENT AUCTIONS
HIGH QUALITY BOOTHS, BAR STOOLS, DINING CHAIRS AND TABLES. WEST SAINT PAUL, MN
MORE INFORMATION AT
AcesBid.com

ROGERS, MN - Large Auction! Construction equip & materials, truck, trailers, lawn care eq, plumbing & electric fixtures; hotel furnishings. Sat June 14 10AM. 22851 Industrial Blvd, For Info: 320-980-5727 Mitchell-Przybilla Auction Co. See full listing at: **MIDWESTAUCTIONS.COM** Dean Mitchell lic #7305019 Albany, MN

★★★★★★★★★★★★★★★★★★
CITY OF MINNEAPOLIS
AUCTION
OF IMPOUNDED VEHICLES AND (3) 00 BLUE BIRD 71 PASSENGER BUSES
OPEN TO LICENSED SCRAP METAL PROCESSORS & USED MOTOR VEHICLE PARTS DEALERSHIPS ONLY
51 N. Colfax, 2 Blocks So of Glenwood on Colfax. Thurs. 06/05/2014 10:30 AM. Lot open for vehicle inspection 1/2 hour prior to sale. No One under 18 Admitted. Mark Friederichs Lic #27-20; Mpls, MN
★★★★★★★★★★★★★★★★★★

317 Estate Sales

LAKE MINNETONKA COLLECTOR
930 Partenwood Rd, Orono. **SUN 10-3**
PACKED!! PHOTOS @ ESTATESALES.NET.
MUIRFIELD ASSOCIATES
(763) 234-1734

BURNSVILLE - 15105 Cty Rd 5. By Caring Transitions of Mpls. Sat-Sun 9-3 #s 8:30 Sat. '05 Silverado, tools, garage, patio, garden, fishing, furn, flat TVs, home decor, curios. estatesales.net

320 Art & Art Goods

ART LIQUIDATORS 612-501-8998
We Purchase Limited Edition Prints

323 Antiques

ANTIQUE, GARDEN AND CABIN AUCTION
MON. JUNE 2, 6 PM
PREVIEW: SUN 4-8 & MON 10-6
Amer oak furn, Vict garden urns & benchs, patio sets, wicker, iron fence, gates, wood boats, Orient rugs, RW stonewr, Vict gls, jewlry, sterl flatwr, artwrks, wildlife, etc, sport items, decoys & more.
CATALOG W/PHOTOS AVAIL @ WWW.LUTHERAUCTIONS.COM
LUTHER AUCTIONS
2556 E 7TH AVE, NO. ST PAUL
651-770-6175 LIC #82-73

MADA ANTIQUES SHOW
June 7,10-6pm & June 8th,11-4pm
Fine Arts Bldg, MN State Fairgrounds
mnantiquesdealers.com

QUEEN ANNE EXCEL COND. Secretary, Foyer Table & more 952-240-7226

324 Collectibles

BUYING ALL COLLECTIBLES A+ rating BBB. Gold, diamonds, silver/coins, comics, bseball crds, war items, Americana. Cash -not a check. 36 yrs in biz. Housecalls/appts. Mark 612-802-9686

COIN SHOW SUNDAY, JUNE 1
Crown Plaza 494/34th Ave Bloomington

"FABULOUS ESTATE AUCTION"
To settle the estate of
LENORE HIMMELWRIGHT
SUNDAY, JUNE 8, 2014 - 1:00 PM
Choice antiques & collectibles. Large collection of rare coins & currency. Choice high end men's & women's jewelry - approx 600 catalogued lots.
Photo catalog online now at:
www.proxibid.com/jpc
Shakopee VFW
James Peterson, Lic 2708040
Mpls, MN. 612-865-2220

Have Gold, Silver, Coins or Jewelry? WE ARE ALWAYS BUYING
Before you sell your rare or collectible coins, jewelry items or bullion products to anyone else, we invite you to contact us for a no-obligation comparison quote.

We offer unbeatable buy prices for ALL precious metals items and are always willing to give quotes by phone or email

St Paul Gold & Silver Exchange
1197 Payne Avenue
St Paul, MN 55130
651-776-0691
www.stpaulgoldandsilver.com
stpaulgoldandsilver@gmail.com
Mon-Sat 10:00 - 6:00pm

10 ROOM 7 GABLES BOOKS & ANTIQUES CLOSING! 35%-50% off through June! Many book categories and collectibles specializing in animal collectibles and books mainly dog, cat & horse. Friday 9-1:30, Saturday 10-5 or by appointment. 507-645-8572
313 WASHINGTON ST, NORTHFIELD

★ STAMP SHOW ★
2nd Sunday Stamp Bourse. Kelly Inn, St Paul. Sun, June 8, 10-4. 763-473-0750

332 Building Supplies

MAPLE GROVE CONSTRUCTION WAREHOUSE SALE
Sat. May 31, 10 AM to 2 PM
Everything must go!
7351 Kirkwood Lane N.
Maple Grove, MN 55369

337 Firewood

MIXED HARDWOODS 4X8X16" DRY SEASONED, GUARANTEED $130
FREE DELIVER/STACK 651-272-0994

346 Materials Handling & Construction Equipment

SKID STEER ATTACHMENTS Grapple buckets, brush clamps, grading planers, hoe arm, buckthorn puller, pallet forks, snow plows. 651-269-5688

367 Appliances - New

AMERICAN BY AO SMITH WATER HEATERS
NEW AMERICAN BRAND BY AO SMITH WATER HEATERS TRUCKLOAD SALE. 40, 50 AND 75 GALLON. GAS AND ELECTRIC. 6 YEAR WARRANTY AND 12 YEAR WARRANTY. NORMAL RECOVERY & HIGH RECOVERY. WHOLESALE PRICES 763-557-1117

368 Appliances - Used

WASHERS/Dryers/Ranges/Refrig & MORE
www.appliancedepot.com 651.454.5995

369 Furnishings - New

MATTRESS STORE - FINAL DAYS GOING OUT OF BUSINESS
75% OFF Premium Memory Foam
Queen Set: Was $2,399, Now $599
50% OFF Deluxe Mattresses
Queen Set: Was $559, Now $279
169 & Broadway in Downtown St. Peter
(507) 934-5842

BEDS BEDS BEDS 612-782-9595
TWIN PILLOW TOP SET $105
FULL PILLOW TOP SET $115
QUEEN PILLOW TOP SET $120
KING PILLOW TOP SET $200
ALL NEW WITH WARRANTY
DELIVERY AVAILABLE

370 Furnishings - Used

DINING ROOM TABLE & 5 CHAIRS exc cond, oak, $795 cash 763.588.6158

MODEL HOME FURNITURE SALE
THURSDAY, JUNE 5, 9AM-3PM.
Half price starting @ noon.
10779 Lyndale Bluffs Trail, Bloomington

371 Jewelry & Precious Metals

BUY/SELL Diamonds, gold, est jewelry, coins. A+ rating BBB. Cash or check. 35 years in biz. 1660 S. Hwy 100, #500, St Louis Pk or call Mark 612-802-9686

MINNESOTA'S DIAMOND EXPERT Continental Diamond.com St.Louis Park; top prices paid for Diamonds gold & platinum. 952-593-5602.

377 Good Things To Eat

MINNESOTA HONEY COMPANY
LOCAL VENDORS 4956 XERXES AVE SO. MPLS. 612-920-3510 mnhoney.net
GIFTS, BASKETS, FAVORS.

391 Tickets

FOR SALE MLB ALL STAR TICKETS Tickets for all events. Uppers, lowers & field boxes. All priced right.
786-603-8487
tristargolden@yahoo.com

Note: Some airtravel tickets are non-transferable or contain special restrictions. Please investigate all conditions and restrictions before making your purchase.

403 Cats

RAGDOLL KITTENS Adorable! Text or call 612-202-8262 or call 763-675-3143

404 Dogs

ALASKAN MALAMUTE PUPS AKC fam raised, vet chk, $750. 515-571-8142

BULLDOGGE OLDE ENGLISH PUPS 3M, 1F, IOEBA reg, 2 brindle & wht, 2 brwn/wht, shots, wormed, dews, vet chk have both parents $1200 763-688-0685

Cockapoo/GoldenDoodle Puppies
Available mid-June. Home raised, vet checked, shots, de-wormed. $400-$900
701-306-6411

DACHSHUND PUPS Reg, shots, guar. M/F $300-$350 Will meet 507.368.4857

ENGLISH BULLDOG PUPS AKC, vet checked, Ryan Krull 712-348-1802

ENGLISH COCKER SPANIELS AKC Puppies for Sale, $750.00 Bemidji, MN Avail June 6th. 218-368-2200

ENGLISH SPRINGER PUPS, vet chkd, 1st shots, F $350 M $300 320.223.4149

FRENCH BULLDOG CKC, Fawn F, vet chk, health guar, $1200. 320-259-1006

GERMAN SHEPHERD PUPS AKC
US/German Lines. Guaranteed.
715-537-5413. www.jerland.com

GERMAN SHEPHERD AKC reg., blk & tan, fam rsd, both parents, hips & dews 4 M, 1 F, $800/$1000, 218-838-3345

GERMAN SHEPHERD AKC registered, 8 weeks old, $750, 612-803-8161

GERMAN SHORTHAIRED POINTER AKC pups $350-400. 320-864-6649

GERMAN SHRTHR PTR Pups, Champ lines, ready 6/15. $750. 320-221-2980

GOLDENDOODLES all sizes. Shots. $550-$1200. 507-534-3311

GOLDENDOODLES Mini-standard F2 ready now. www.karisdoodles.com 651-214-1286 $1550

GOLDEN RET. AKC Up to date vac/dw. F$800 & M $700 local 312-206-4964

GREAT DANE AKC EURO $800 BL/BLK 5 GIRLS LEFT HEALTHY 651-485-0278

GREAT DANE AKC PUPS, Beautiful, vet chk, shots, 763-786-4527

GREAT DANE Gentle Giants, AKC, vet ✔, shots, fam raised. $1000+ 320-384-6226

LAB AKC PUPS Yellow or Ivory 'Blocky' Exc bldlns, Raider line. Good Lookin' Pups! M $400 / F $450. 320-749-2428

LAB PUPS - YELLOW, BLACK, AKC Champ bloodlines-Great hunters & Family pets-Shots/Dews-Family raised-NW Metro $500. 612-889-5467

LABRADOODLES (MINIS) Reds & Ivories, Males & Females, all shots, puppiesupnorth.com 320-250-2464

LABRADOR RETRIEVERS AKC Mom is Ivory with a great disposition vaccines, dewormed $500 320-808-4045

LABRADORS YELLOW AKC, Ex. bld lines,hunters,calm. $350 612-581-8721

PITBULL BLUE NOSE PUPS 7 wks, family raised. $350. 763-233-9802

POODLE AKC, standard, black, 11 wks, M/F, sweet natured $800. 507.402.4401

POODLES, TOY 3 AKC red, 3 APR apricot 9wks $650-$950 Dave 612-386-7501

ROTTWEILER AKC PUPS, Euro champ lines - including German, 1 M, 2 F. Call for pricing. 1-651-301-3138

ROTTWEILER AKC Qual breeder, 2 yr hip guar. vhnrotts.com 507-241-0482

SCHNAUZER, MINIATURE Black males $800 AKC-vet-Fmly Rsd 612-327-5383

SCHNAUZER MINI CKC salt & pepper, shots, home rsd F $500 320.760.6839

WIRE HAIRED GRIFFON Excellent bloodlines. $900 218-244-5750

415 Livestock

FOR SALE Bred Beef Cows for Sale. Also Black Angus Bulls. 612-501-9558

448 Hunting & Fishing Equipment


CONCEAL / CARRY $100
SUN 6/1 WILD MARSH SPORTING CLAYS
SAT 6/21 NOW THEN
SAT 7/12 OX YOKE INN
New/Renewal 612.203.1177
MINNESOTACONCEALCARRY.COM

AUTOS

MITSUBISHI

1991 MITSUBISHI 3000 GT VR4 white w/red lthr, $6755, 612-790-8660

ANTIQUE & CLASSIC CARS

1977 LINCOLN MARK V Pioneer license, $1800, white. 612-822-8403

1963 OLDSMOBILE STARFIRE 427 Chevy engine, 400 turbo rebuilt. Also, extra Chevy 427 & 396 engines. Best offer. **651-487-8037**

ANTIQUE & CLASSIC CARS

28TH ANNUAL TWIN CITIES
Classic Car Auction
2 DAY AUCTION! June 20th & 21st 2pm
Held at: MSRA "Back To The Fifties"
Minnesota State Fairgrounds
175 CLASSIC CARS - INDOORS!
'29 Mod A Fire Truck '32 Ford 3Win Cpe '36 Fords - 2, '36 Olds, '37 Ford Cpe, '39 Ford Conv, '40 Mercury', '43 Ford Jeep, '47 Chev PU, '48 Pontiac, '49 Chev PU, '49 Merc 2dr, '51 Hudson '51 Ford Deluxe '53 Chev 2dr '54 Bel Air '54 Skyliner, '54 Ply, '55 Bel Air, '55 Chev 210, '55 Pontiac HT, '56 Chev 210, '57 Bel Air, '57 T-Bird, '58 Edsel Conv, '59 Edsel 2dr, '60 Fury Conv, '61 Jag, '62 Chry 300, '64 Bonne, '64 Tempest, '65 El Camino, '66 Galaxie Conv, '67 Coronet, '68 Ply GTX, '68 Camaro Conv, '68 Cyclone '68 Torino 69 Charger Hemi '69 Buick GS400 '69 & '70 Chevelle SSs '73 Mach I, '73 Mustang Conv, '75 Matador, '75 Vette + 100 MORE!
STILL TIME TO ENTER YOURS!
Call for seller/buyer info: 651-633-9655
S. Doll, 2755 Long Lk Rd, StP. Lic23367

MOTORCYCLES & MOPEDS

2007 YAMAHA VMAX 6,700 miles, like new cond! $6,800/bo. 507-340-4184

VECTRIX ELECTRIC SCOOTER VX2 $4200 new, selling for $2500. For more information call **230-248-4077**

WANTED: YAMAHA OR SUZUKI TRIKE Lehman or Champion conversions. Reasonably priced. Call 218-628-2941 Leave message.

BARGAIN LOT AUTOS

1988 FORD F150 XLT, V8, 85M, $900 1998 CHEVY pickup S-10, V6, 50M, no rust, red, $4000 or BO 612-822-8403

ONLINE AUCTION
Proceeds of all sales benefit Make-A-Wish, the Disabled American Veterans, or Breast Cancer Research Foundation .
Go to CharityCarAuctions.com to register, view, and bid on 30+ cars, vans, and SUVs.

OUR FEATURED ITEMS THIS WEEK:

04 DODGE CARAVAN	01 KAWASAKI ZR-7S
04 MAZDA 6-WAGON	00 MERCURY COUGAR
03 CHEVROLET VENTURE	99 GMC SIERRA
02 BUICK CENTURY	78 CADILLAC EL DORADO

** TIRES & BATTERIES SOLD DAILY **
NOW MOUNTING AND BALANCING!
NEW AND USED

Auction concluding: Wed. June 4th at 8pm.
Preview at: CHARITY CAR AUCTIONS
Sat. 10 am - 2 pm • Mon. Noon - 7 pm
Tues Noon - 7 pm • Wed Noon - 5 pm
2576 Doswell Ave. (Hwy. 280 and Como)
651-641-0944
New online auctions start every Saturday!

AUTO LOANS

$50 Plus Your Trade COULD GET YOU APPROVED*
CarHop Auto Sales & Finance
612-315-6916
APPLY ONLINE @ CARHOP.COM
6 Metro Stores Plus St. Cloud & Rochester
*Limited time offer. Select vehicles only. With approved credit. $50 down plus tax and registration. 28 monthly payments of $43.46 per $1000 financed. Based on 20.9% annual percentage rate.

VEHICLES WANTED

$$ $350 - $7500 $$
ON MOST VEHICLES
Junkers & Repairables
More if Saleable
- Free Towing -
- No Hassles -
- Lic. Minnesota Dlr
- BBB A+ RATING
- Bonded and Insured -
- Entire Metro Area -
ENVIRONMENTALLY FRIENDLY RECYCLER
WWW.CROSSTOWNAUTO.NET
612-861-3020 651-645-7715

$350 & up
On Most Junk and Repairable Autos
More on Most '00 & up
Flatbed Towing Service
Serving Entire Metro
7 days a Week
Same Day Service
612-554-9469

TOP $ PAID - $300 Paid on Most Cars, 7 days 612-867-4325 or 612-598-3801

$$$$$ CASH FOR CARS $$$$$
CALL US!!! FREE TOW. 612-414-4924

977 RVs Motorized

1999 SOUTHWIND 36' dbl pullout, gen, new tires, 37M. $30k 612.940.0505

978 RVs Non- Motorized

2001 BRECKENRIDGE 40' PARK MODEL, front end kitchen, 3 tip outs, good cond, on campsite, 763-529-7464

BACKTALK

sudoku

	7							1
9		3	5				6	
			7		9	5		
3			1	7				2
	2						1	
6				4	5			8
		7	6		2			
	5				7	8		3
2							4	

Complete the grid so each row, column and 3-by-3 box (in bold borders) contains every digit 1 to 9.

For strategies on how to solve sudoku, visit sudoku.org.uk.

6/4/2014

May 28 solution

6	9	5	4	1	2	7	8	3
8	1	4	6	7	3	9	2	5
3	7	2	5	9	8	6	1	4
4	5	9	2	3	1	8	7	6
2	3	6	8	4	7	1	5	9
1	8	7	9	5	6	3	4	2
5	6	8	7	2	9	4	3	1
9	2	1	3	8	4	5	6	7
7	4	3	1	6	5	2	9	8

horoscopes

Today's Birthday (6/4): Talk about your heart's desire this year. Practice doing what you love. Your sense of style grows more refined. Creative efforts leap forward. Keep financial priorities practical.

To get the advantage, check the day's rating: 10 is the easiest day, 0 the most challenging.
Written By Linda C. Black

Aries (3/21 - 4/19): Today is a 7 – Listen with compassion and find agreement where least expected. There's more work coming today and tomorrow.

Taurus (4/20 - 5/20): Today is a 6 – Immerse yourself in the past. Look for hidden benefits and silver linings. Have faith without taking big risks.

Gemini (5/21 - 6/21): Today is a 6 – Make your home more comfortable today and tomorrow. Focus on details, one by one. Increase the amount of water you interact with today.

Cancer (6/22 - 7/22): Today is a 7 – Choose the most promising option. Use your natural magnetism to convince others. Accept a nice benefit.

Leo (7/23 - 8/22): Today is a 6 – There's potentially more money ahead. Start your shopping list. It's easier to make household changes soon.

Virgo (8/23 - 9/22): Today is a 6 – Make extra effort and add style. Discover hidden resources when you talk about what's needed. Plan now for action later.

Libra (9/23 - 10/22): Today is a 7 – Romance soars, if you're prepared. Take time out for your partner. It could get magical. Handle home responsibilities today and tomorrow.

Scorpio (10/23 - 11/21): Today is a 6 – Upgrade your sound system and play some dreamy music. Team projects go well today and tomorrow.

Sagittarius (11/22 - 12/21): Today is a 7 – Add beauty to your surroundings, work and home. Upgrade your look. Begin a project without knowing how to finish, and discover new tricks.

Capricorn (12/22 - 1/19): Today is a 6 – Acknowledge those who provide assistance with love. Remember a dream. Consider the long-term future.

Aquarius (1/20 - 2/18): Today is a 7 – Get into planning today and tomorrow. Join forces with another for funding and support. Blend resources and talents with synchronicity.

Pisces (2/19 - 3/20): Today is a 6 – Collect an old debt and hide away the unexpected loot. A partner's opinion is important. Discover romance anew today and tomorrow.

PUBLIC NOTICE: Announcement of a Five-Year Review for the General Mills/ Henkel Corporation National Priorities List (NPL) Site

The Minnesota Pollution Control Agency (MPCA), with oversight from the U.S. Environmental Protection Agency, is preparing a 2014 Five-Year Review. The purpose of the Review is to assess the groundwater cleanup and ensure that human health and the environment remain protected at the General Mills/Henkel Corporation NPL Site (the "Site") located in Minneapolis, Minnesota.

Site background
From 1947 through 1977 General Mills, Inc. (GMI) conducted chemical research at the site. Workers dumped waste volatile organic compound (VOC) solvents containing trichloroethylene (known as TCE), in a soil absorption pit from 1947 until 1962. GMI investigated the absorption pit in 1981, and reported to the MPCA that there was contamination of soil and groundwater in the absorption pit area.

An October 23, 1984 Response Order by Consent between the MPCA and General Mills provides the basis for remedial activities at the Site. The groundwater cleanup remedy consisted of a groundwater pump-out system to control the groundwater contaminant plume as well as remediate contaminated groundwater. Extraction and treatment of impacted groundwater to stabilize the plume of VOC contamination began in 1985 and ran until 2010.

In October 2013 the MPCA received soil gas data indicating potential soil gas vapor intrusion into buildings in the vicinity of the site. The potential for vapor intrusion was not addressed in the 1984 Response Order by Consent and is not part of this Five-Year Review.

Community involvement
The Five Year Review report will be complete in September, 2014. The community can contribute by providing comments regarding any work done at the site from 1981-2014. Comments are accepted through July 7, 2014. Please call, email or mail your comments to:

David Scheer
MPCA
520 Lafayette Road North
St. Paul, MN 55155
Email: dave.scheer@state.mn.us
Phone: 651.757.2693

Additional information on the site, including historical documents, can be found online at www.pca.state.mn.us/9akx8ry and at the Minnesota Pollution Control Agency inSt Paul.

SECIA
(see-key-ah)

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Find us on Facebook

*The **Southeast Como Improvement Association** works to maintain and enhance the physical, social, and economic environment of our neighborhood.*

June 11, 2014

Mr. Hans Neve
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

The Southeast Como Improvement Association (SECIA) requests that the Minnesota Pollution Control Agency (MPCA) take the required steps to implement an Emergency Removal Action at the former General Mills Inc. (GMI) research facility located at 2010 East Hennepin Avenue.

Traditional remediation plans tend to focus on the purely technical aspects, yet there are many other levels of harm done to individuals and a community. If the intent is truly to repair the harm, then this project must include actions that address: mental health, physical health, financial health, livability (in homes and in the community) and the long-term viability of the neighborhood. ***In the medical world this multi-faceted approach is often referred to as 360-degree services.*** We strongly feel that to become a model for 'doing this right' for future communities, remediation must include activities that address these human elements along with the technical options measured by industry standards.

We understand that there may be other dump locations, that the actual amount dumped may be under debate and that time may have removed remaining chemicals from the soil. As such we have every expectation that further expanded testing will occur to more clearly define the scope of the problem around the original dump sites as well as the rest of the community. We believe that excavation and testing can be conducted simultaneously.

However, the original dump site has been publically indicated on the map for over 30 years as a site where an incredibly large amount of toxic chemicals were dumped. It is that message that is firmly established in the minds of the Como residents, the media and the general public. Given that easily accessible on-line research and recen media stories do not indicate that any excavation of the site has occurred, the conclusion for the average person is that the site was never excavated and the assumption will be that there are still toxic chemicals located in the soil. Even if soil tests (borings or other sampling methods) show a low degree of TCE, the general public's perception will remain that nothing was done to clean-up the original dump site so prominently starred on all maps. This will continue to raise questions in the minds of current residents and could deter future residents from moving into Como.

Therefore we make this Removal Action request based on the following:

- That it is critically important the community, the public and the media visually see that the original site has been fully excavated as an initial step in the fuller remediation to come.
- That this will help the Como community see that there will be real, physical actions this time in cleaning up the pollution which will show the aggressiveness of short and long-term activities.
- That while this may not be fully in line with typical technical standards, it will start to address concerns related to the comfort of residents as well as the long-term viability of the neighborhood – as it will 'take the star off the map.

- That any excavation of the original dump site was minimal, as it was determined originally to focus on the pump and treat system of remediation.
- That any chemicals dumped by GMI still reside (or are perceived to be residing) in the soil around the original dumping pit and the average person will assume they still pose a threat for continued contamination of the groundwater.
- That there is little trust in the Como community given past practices and that the original parties – GMI, MPCA – are still the ones that will move this project forward; therefore we need actions that are designed to rebuild trust in the process.
- That the MPCA has the authority to do what is right and could exercise that authority to start visible activities as quickly as possible.
- That the federal Environmental Protection Agency (EPA) recognizes the need for Removal Actions even at sites that will also need longer-term clean-up:

"In addition, abandoned industrial facilities that used chemicals and other hazardous substances may not have stored or disposed of them properly prior to closing operations. Today, these sites are undergoing long-term cleanup actions which may take several years to fully study the problem, develop the right remedy, and clean up the hazardous waste."

"EPA does not ignore the possibility that serious immediate threats to the environment or to the people who live or work around these sites may need to be taken care of before the long-term action is complete, or even underway. If there are any immediate threats present at these sites, EPA may respond quickly to perform a removal action."

"A long-term clean-up site may ultimately have several removal actions, or it may have none. In some cases, removal actions eliminate the need for a long-term cleanup at certain portions of the site. As a result, removal actions may speed the cleanup of portions of the site and may lead to early elimination of the site from EPA's long-term clean-up program." (Source: http://www.epa.gov/superfund/programs/er/hazsubs/timecrit.htm)

SECIA believes that direct involvement by the community in the development of a 360-degree approach towards the remediation of the TCE issue should become the model for the MPCA and other communities in the future. We look forward to your consideration and timely response to our request.

Sincerely,
Wendy Menken, SECIA, President

CC: Lee Anderson, General Mills
Mary Sands, Barr Engineering
Rita Messing, Minnesota Department of Health
Cam Gordon, Minneapolis Council Member Ward 2
Kevin Reich, Minneapolis Council Member Ward 1
Peter McLaughlin, Hennepin County Commissioner District 4
Kari Dziedzic, Minnesota State Senator District 60
Diane Loeffler, Minnesota House of Representatives District 60A
Phyllis Kahn, Minnesota House of Representatives District 60B
Keith Ellison, US House of Representatives, Minnesota District 5
Amy Klobucher, US Senator from Minnesota
Al Franken, US Senator from Minnesota

Minnesota Pollution Control Agency
520 Lafayette Road North | St. Paul, MN 55155-4194 | 651-296-6300 | 800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us

June 26, 2014

Ms. Wendy Menken
Southeast Como Improvement Association
1170 15th Avenue Southeast
Minneapolis, MN 55414

RE: June 11, 2014 Southeast Como Improvement Association Board Letter Regarding the General Mills Site, 2010 Hennepin Avenue East, Minneapolis

Dear Ms. Menken:

The Minnesota Pollution Control Agency (MPCA) has received the June 11, 2014 correspondence from Southeast Como Improvement Association (SECIA) regarding the General Mills Superfund Site.

On April 1, 2014 SECIA sent a letter to MPCA requesting immediate excavation of an area 100 feet in diameter and 30 to 35 feet deep centered on the location where chemicals were disposed on the General Mills Superfund Site between 1947-1962. The purpose of excavation would be to remove soil contamination that may be continuing to contribute to groundwater and/or soil vapor contamination. The request cited a need for additional work in the area where chemicals were disposed and a strong desire that the work move forward as quickly as possible.

During our April 23, 2014 meeting and also in our May 1, 2014 response letter to you, MPCA agreed with SECIA that additional work was needed and the work should move forward on an expedited timetable. However, before an excavation could be considered it was important to verify that trichloroethylene (TCE) contamination in the soil remained at that location. In May 2014 General Mills collected soil and groundwater samples from four locations in the vicinity of the former disposal area. The investigation did not find TCE contamination in soil samples collected in the shallow (upper 30 feet) of the former disposal area. Low level TCE (less than 1 part per million) was found in the soil at depths between approximately 40 and 53 feet below the ground surface in the former disposal area. A report outlining the detailed findings of this work was provided to SECIA on June 3, 2014. Additionally, data from nine soil borings completed in the area around the former disposal area in 2001 did not find soil contamination at concentrations that would justify an excavation.

Excavation of the former disposal area would not provide an overall environmental benefit or health risk reduction to residents. The remaining TCE contamination identified in the soil is minimal and excavation work would add noise and air pollution (diesel exhaust and dust) impacts from heavy equipment operation and trucks hauling soil in and out of the Site. Based on this information, excavation in the former disposal area will not be conducted.

On June 11, 2014 SECIA sent a letter to the MPCA requesting that the MPCA implement an Emergency Removal Action consisting of excavation in the former disposal area. We discussed the letter together during our meeting on June 18, 2014. The letter cited a need for visible action in that area and that the lack of visible action would continue to raise questions in the minds of current residents and could deter future residents from moving to the Southeast Como neighborhood. The letter acknowledged that "time may have removed the remaining chemicals from the soil" but also stated that there were other considerations that are important to the community. These include mental health, financial health, livability and the long-term viability of the neighborhood. These MPCA realizes these additional considerations are of great concern for the community. These additional considerations fall into what the Superfund process calls community acceptance.

Most of the work to test and mitigate homes potentially impacted by the TCE contamination has been completed. The project is beginning to move into the next stage which will include selecting and implementing cleanup actions to further address the soil vapor contamination. Community involvement and participation are an important part of this process, the public will be asked to comment on the proposed cleanup action. As part of the Superfund process, one of the nine criteria that will be used in the evaluation of cleanup action alternatives is community acceptance of the proposed action.

The vapor intrusion issue in the Southeast Como neighborhood clearly has impacted the neighborhood. However, much progress has been made since the testing and mitigation of homes and businesses began in November 2013. Many of the issues that comprise the additional considerations (mental health, financial health, livability and the long-term viability of the neighborhood) could benefit from a wider and more consistent communication of the progress that has occurred, as well as a broader understanding of the potential positive and negative effects associated with remedial action options. Some of this communication could include:

Mitigation Systems are Fully Effective for TCE and for Radon

Mitigation systems are custom designed for each home or business to provide protection from vapor intrusion, protecting the health of the people who live or work there. After a mitigation system is installed, it is tested to be sure it is fully protecting the building. This is done by drilling small holes in the basement floor slab and measuring the amount of vacuum under the basement floor at different locations in the basement. The mitigation system is required to create a specific amount of vacuum under the basement floor slab over the entire building footprint. This assures that vapor in the soil under the basement will not enter the building. This protects the home from the possibility of chemical vapor intrusion and also radon. Overall, radon is the greater public health threat. The mitigation work will provide protection for about 170 homes that previously did not have this radon protection in place.

As an additional measure to assure that mitigation systems are fully effective, some homes that initially had higher levels of TCE in the vapor under the basement floor have had indoor air tested after the mitigation system was installed. The indoor air tests have validated the conclusion that the mitigation systems in the Southeast Como neighborhood are fully effective.

Response Actions for Homes and Businesses Implemented

Vapor testing and mitigation of homes and businesses began in November of 2013. Since then, over 327 homes in the Southeast Como neighborhood have been tested for vapor intrusion. Mitigation work is ongoing and has been completed in 118 of the 170 homes where a potential vapor intrusion risk was identified.

Plan for Cleanup of TCE in the Soil Vapor is Beginning

As the building testing and mitigation work moves toward completion, the next stage of the project which is long term cleanup and monitoring of the soil vapor is beginning. The MPCA has required General Mills to provide plans for identifying and evaluating a range of alternatives to cleanup contamination in the soil vapor and groundwater due to General Mills' operation at the Site.

Remediation Technology Educational Fair

The MPCA is in the process of developing a Remediation Technology Educational Fair in an effort to provide residents and property owners an understanding the different methods for environmental cleanup of TCE releases. This will provide residents and property owners an opportunity to discuss why, when and where certain environmental cleanup strategies are used along with the pros and cons associated with each technology. The intent is to provide residents and property owners with a deeper understanding of the potential positive and negative effects associated with different environmental cleanup options.

Cancer Rates in SE Como Are Not Unusual

The Minnesota Department of Health (MDH) completed a cancer surveillance study for the zip code 55414 in the Southeast Como neighborhood. MDH epidemiologists looked at the numbers and types of cancer reported to the Minnesota Cancer Surveillance System (MCSS) in the zip code 55414 and the seven-county Twin Cities Metropolitan area between 2001 and 2010. The number of newly diagnosed cancer cases in the area over a 10 year period did not differ from the number expected based on comparison with the seven-county Twin Cities Metropolitan area. Data from the MCSS has limitations, including only providing information about the address of a person when a cancer is diagnosed. Cancers are progressive diseases, and environmental exposures contributing to cancers may have occurred many years before and at a different address(es). Thus, the analysis does not specifically address potential health risks from environmental exposures to TCE. However, the data analysis found that cancer rates in the Southeast Como neighborhood are very close to expected values.

Please contact me at 651-757-2608 or e-mail at hans.neve@state.mn.us with questions or concerns.

Sincerely,

Hans Neve, Supervisor
Site Remediation & Redevelopment Section
Remediation Division

HN:csa

cc: See next page

cc: The Honorable Amy Klobuchar, United States Senator
The Honorable Al Franken, United States Senator
The Honorable Keith Ellison, United States Representative
The Honorable Kari Dziedzic, Minnesota State Senator
The Honorable Diane Loeffler, Minnesota State Representative
The Honorable Phyllis Kahn, Minnesota State Representative
Commissioner Peter McLaughlin, Hennepin County
Minneapolis Council, Cam Gordon
Minneapolis Council, Kevin Reich
Minneapolis Council, Jacob Frey
Lee Anderson, General Mills
Mary Sands, Barr Engineering
Cindy Weckwerth, Minneapolis Health Department
Rita Messing, MDH

From: Judith Treise [mailto:jatreise@gmail.com]
Sent: Tuesday, May 20, 2014 6:49 PM
To: Scheer, Dave (MPCA)
Subject: 5 Year Report -- General Mills TCE Site in Como Neighborhood

I cannot understand why this site has been neglected and why we in the neighborhood were never informed of its existence. I bought this house in 1993 and was never made aware that I was living near a Super Fund Site. This is a case of gross negligence. How can you explain the lack of concern for other peoples' lives?

Now I live with the knowledge that this negligence may result in my own sickness and a premature death. I trusted my government to protect me. I am sickened by this failure of the MPCA to do its job.

Judith Treise

1051 20th Avenue SE

Mpls. 55414

612-331-7040

From: Larry Deeney [mailto:Larry.Deeney@genmills.com]
Sent: Friday, December 12, 2014 3:59 PM
To: Scheer, Dave (MPCA)
Cc: Neve, Hans (MPCA); Grape, Timothy (MPCA); Campbell, Fred (MPCA); Mary Sands
Subject: Comments to draft Five Year Review

Hi Dave,

Attached are General Mills' comments to the draft Five Year Review document. A hardcopy will follow.

Thanks for the opportunity to review and provide comments. If you have any questions or would like to discuss any of the points in greater detail, feel free to contact me.

Have a good weekend.

Regards,

Larry Deeney
Sr. Technical Leader – Global Environment
Phone: 763-764-3476
Mobile: 612-964-8468
larry.deeney@genmills.com

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December 12, 2014

David Scheer
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155

Re: General Mills/Henkel Corporation Site
Draft Five-Year Review

Dear Mr. Scheer:

Thank you for the opportunity to provide comments on the Minnesota Pollution Control Agency's ("MPCA") draft Five-Year Review ("FYR") for the General Mills/Henkel Corporation Site (the "Site"). We understand you have provided both General Mills, Inc. and the Southeast Como Improvement Association ("SECIA") copies of the draft FYR for review. These comments are based on the draft we received on December 2, 2014.

As you know, the purpose of a five-year review is to evaluate the implementation and performance of a remedy to determine if the remedy is or will be protective of human health and the environment. Protectiveness is generally defined in the National Contingency Plan ("NCP") by the risk range and the hazard index ("HI"). Evaluation of the remedy and the determination of protectiveness should be based on and sufficiently supported by data and observations.

To assist MPCA in achieving the purpose of the FYR and to ensure the information contained in the FYR is accurate and factual, we offer these comments, beginning with general comments.

GENERAL COMMENTS

1. The draft FYR correctly states that the Remedial Action Plan ("RAP") appended to the Consent Order identifies the selected remedy to address VOC contaminants in groundwater. The RAP was modified in March, 2014 ("RAP Modification #1) to include not only the extensive subslab soil vapor investigation and mitigation system installation effort, but also to include requirements for soil, groundwater and soil gas investigation and monitoring activities and development of a Feasibility Study with respect to the potential vapor intrusion pathway. In September 2014, MPCA approved the Vapor Intrusion Pathway Investigation Work Plan (the "Work Plan"), which currently is being implemented. This Work Plan calls for extensive sampling and monitoring activities including sampling from 12 direct push boring locations, sampling from 13 existing monitoring and pump out wells plus installation and sampling from at least 38 new monitoring wells, and monitoring from a new sentinel vapor monitoring network that includes 30 vapor monitoring ports. The Executive Summary and Section VI of the draft FYR do not mention or adequately consider this information. Instead, the draft FYR inappropriately focuses on the 2012 Annual Monitoring Report, although the proposals for continued monitoring in that report were effectively replaced by the MPCA-approved Work Plan. The investigation and monitoring activities in the Work Plan bear directly on and render moot several of the recommendations in the draft FYR. In this same vein, the draft FYR repeatedly states that monitoring and well maintenance activities occur only every five years. This inaccurately reflects the status of Site response activities and the

remedy as stated in the modified RAP. The recommendations and findings of the FYR should more accurately reflect this more complete and current information.

2. The draft FYR does not appropriately reflect uncertainties surrounding historic use of the on-site disposal area. The Executive Summary and Section III.3 present certain historic activities with greater certainty than is supported by the record. With regard to the time frame in which the disposal area activities occurred and the estimated volumes, it is more accurate to say it was estimated that the disposal area was used from approximately 1947 to 1962, and further, it was estimated that 1,000 gallons a year of waste was disposed there. These estimates, which date back to 1981, were based on very limited information, and early reports at the Site recognized that this may have been an over-estimation. It would be more accurate to say these timeframes and volumes were estimates, based on limited information available at the time.

3. The draft FYR fails to mention the significant amount of data that demonstrate other sources in the area have been or are contributing to the contamination in the East Hennepin area. To sufficiently evaluate the protectiveness of the remedy, it is vital that this information be included in the FYR. Specifically, MPCA has prepared a CERCLA Pre-Screening Assessment **(Exhibit A**) that identifies several commercial properties upgradient of the General Mills site, including Anne Gendein Trust Property (VP13270), Northwest Warehouse (VP13100), AmeriPride Services – Minneapolis Services (VP13100) and the former Franks Auto Repair (LEAK#1126). MPCA's pre-screening assessment further states TCE was detected at a concentration of 3,600 ug/l in the groundwater at the Anne Gendein Trust Property, located at 359 Hoover Street, and at a concentration of 1,620 ug/l in the groundwater at the former Franks Auto Repair, located at 2314 East Hennepin Avenue. In addition, Barr Engineering's Phase 2G Investigation results showed significant levels of TCE in groundwater at several upgradient boring locations.[1] More recently, samples collected in October 2014 and December 2014 as part of the ongoing Vapor Intrusion Pathway Investigation show TCE in groundwater at levels up to 1,210 ug/l in five direct push boring locations on 23rd Ave. just south of East Hennepin and up to 1,940 ug/l in two other upgradient locations north of East Hennepin.[2] These sampling results show that significant TCE levels currently exist in groundwater upgradient of the Site and downgradient of the sources identified in MPCA's CERCLA pre-screening assessment. This demonstrates that significant upgradient sources of TCE exist that are impacting the Site and locations downgradient of it.

MCPA must give adequate consideration to the presence of these significant, ongoing upgradient sources. The recent data shows higher levels of TCE upgradient of the Site than are found at locations downgradient of the Site. It is incumbent on MPCA to characterize the nature and extent of that contamination, which is not caused by, but is significantly impacting the locations downgradient of, the GMI Site.

4. At several points in the draft FYR, including the Executive Summary, the report states "an increase in trichloroethylene (TCE) concentrations in recent sampling events indicates an increase in contaminant concentrations may be occurring."[3] This statement is inaccurate and misleading with respect to Site conditions. Following shut down of the pump-out system in September 2010, no increase in TCE concentrations has been observed in a majority of the glacial drift wells. Potential increases have been observed in only three wells: pump-out wells 109, 110 and monitoring well V. In two of these wells (pump-out well 110 and monitoring well V), the observed change in TCE concentration is similar to short-term fluctuations observed when the pump-out system was operating. Further, in two of these wells (pump-out well 109 and monitoring well V), the apparent increase in concentration has stabilized or reversed. As noted on page 19 of the draft FYR, the concentrations in these wells remain below the applicable limits in the Consent Order. Moreover, the draft FYR acknowledges on page 24 that the

[1] See Summary of Phase 2G Investigation Report Results, Barr Engineering, Co., May 5, 2014.
[2] Reference e-mail from S. Gaffin, Barr Engineering to H Neve, MPCA, December 11, 2014.
[3] This statement also appears on pages 19, 23, 24 and 29.

former absorption pit is not a continuing source of TCE in shallow groundwater. This reinforces the need for the FYR to recognize and discuss the existence and impact of upgradient sources. If an increase in TCE concentrations in fact is occurring, it likely is due to off-site sources rather than the former General Mills Site. Nevertheless, the report should clarify that TCE concentrations have generally been decreasing site-wide and to the extent there is an increase in concentrations, it is in limited locations and may be related to off-site sources rather than the former General Mills absorption pit.

SPECIFIC COMMENTS

Issues/Recommendations

We offer the following comments regarding the Issues/Recommendations contained in the Executive Summary:

Page v: The Site Name should be "General Mills/Henkel Corporation."

Issue 1: Repair of wells is recommended. Any needed repair work is being completed during implementation of the MPCA-approved Work Plan, rendering this recommendation moot. This should be made clear in the FYR.

Issues 2 and 3: Annual Long-Term Monitoring and Operation and Maintenance is recommended. The referenced five-year interval was based on 2012 Annual Monitoring Report, which was submitted prior to RAP Modification #1. The MPCA-approved Work Plan currently being implemented pursuant to RAP Modification #1 requires extensive groundwater monitoring and sampling. These activities address any potential issues relating to this recommendation, making it unnecessary and moot.

Issues 4 and 5: Evaluate remedial alternatives to meet RAOs established under Issue 5. The Work Plan calls for extensive groundwater monitoring at and near the Site, including installation of 30 sentinel vapor monitoring ports, 38 monitoring wells and sampling from 12 direct push borings in addition to the existing monitoring well network. As stated, this work currently is underway. Following completion of the sampling effort, the RAP Modification #1 calls for completion of a Feasibility Study. The draft FYR does not mention or otherwise recognize these ongoing efforts that render this recommendation unnecessary and moot.

Finally, we note generally that milestone dates in the Issues/Recommendations do not accurately reflect or account for existing Work Plan timelines or timelines for the Site response actions generally.

Site Chronology

GMI understands the 2004 Site Soil and Groundwater Restrictive Covenant was signed by MPCA and BBD Holdings, which owned the Site at the time. The covenant was not signed by GMI. The same error is found on page 12 of the draft FYR.
GMI conducted soil gas survey and investigation activities from about April 2012 through October 2013.

To be complete, the Site Chronology should include the Vapor Intrusion Pathway Investigation Work Plan, which GMI submitted to MPCA in June 2014 and which MPCA approved in September 2014. The Work Plan is currently being implemented.

The Chronology also should list the 2001 EPA Addendum to the Second FYR (Oct. 24, 2001).

III. Background

Page 4, Section III.3 As discussed above, the draft FYR does not appropriately reflect uncertainties surrounding historic use of the on-site disposal area. On June 9, 1981, General Mills submitted a Notification of Hazardous Waste Site, indicating it had received information that waste organics and waste solvents were disposed at the facility located at 2010 East Hennepin Avenue from approximately 1947 to 1962. It was estimated in the 1981 Notification than 1,000 gallons per year were disposed at the facility located at 2010 East Hennepin Avenue. This estimate was based on limited information available at the time, and the volumes likely were overestimated. No contemporaneous records have been found that specifically identify the substances or quantities disposed at the Site. It would be more accurate to word this section as follows:

> The Site was primarily utilized as a technical research facility from 1930 to 1977. GMI primarily conducted food research at the site from 1940 to 1947. In 1947, GMI began chemical research at the Site. From approximately 1947 to 1962, a soil absorption pit was utilized to dispose of waste organics and solvents. The absorption pit located in the southeastern area of the Site was constructed of three perforated 55-gallon drums, stacked and buried to a depth of approximately 12 feet (ft) below ground surface (bgs). In 1981, General Mills estimated that approximately 1,000 gallons of waste organic and solvents were disposed of in the absorption pit each year during its operation.
>
> General Mills notified the MPCA of the soil absorption pit location and the estimated disposal volumes at the site on or about June 12, 1981. Since 1981, GMI has cooperated with MPCA with regard to investigation, remediation, operation and maintenance of soil and groundwater contamination at and downgradient of the Site.

Page 4, Section III.4 – The Prairie du Chien Group is separated from the glacial drift aquifer by three confining units. This aquifer has been impacted by release of TCE from the TCAAP Site in Arden Hills. This information should be clarified in the FYR.

IV. Remedial Actions

Page 7, Section IV.1.1 – As stated above, GMI conducted soil gas investigation activities from April 2012 to October 2013. To more accurately reflect the status of this effort, the first paragraph should include the following information:

- The soil gas investigation confirmed the presence at some locations of TCE in soil gas.
- To date, subslab vapor samples have been taken at 340 properties. Approximately 96 percent of the properties with greater than 20 ug/m3 TCE in subslab have been mitigated.

Although this section of the draft FYR acknowledges the work being done under RAP Modification #1, Section IV.4 fails to consider that the issues raised in the 2011 and 2012 Annual Monitoring Reports are now addressed and effectively superseded by the Work Plan

Page 13, Issue 1, 2009: The Restrictive Covenant was not signed by GMI. It was signed by BBD Holdings, which owned the property at 2010 East Hennepin at the time.

Page 14, Issue 5, 2014: It is not correct that groundwater monitoring is being done under the approved groundwater monitoring plan. Groundwater monitoring is currently being conducted under the MPCA-approved Work Plan dated August 2014.

Page 15, Issue 10, 2014: It is more accurate to state that GMI is currently performing soil, soil gas and groundwater investigation and monitoring pursuant to the Vapor Intrusion Pathway Investigation Work

Plan as necessary to identify and evaluate response action alternatives as may be necessary to mitigate the potential vapor intrusion pathway and reduce VOC concentrations in soil, soil gas and groundwater.

Section VI. Five-Year Review Process

Page 16, Section VI.2, third paragraph, second sentence: This sentence should be worded, "In an MPCA response letter, MPCA summarizes historical (Barr, 2001) sampling events, which did not find TCE soil contamination that justified soil removal. In addition, more recent sampling (Barr, 2014a) found no TCE contamination in the upper 30 feet within the former absorption pit."

Page 17, Section VI.3 – The Draft FYR states the primary documents reviewed include the Consent Order, the previous FYR reports, and Annual Long-Term Monitoring Reports. For a more accurate evaluation of the protectiveness of the response action and thus a more meaningful five-year review of the remedy, more full consideration should be given to the RAP Modification # 1, including the Work Plan, and existing data pointing to the existence of other sources of VOC contamination in groundwater in the vicinity of the Site.

Page 19, Section VI.4.3, first paragraph: Prior to the most recent Work Plan, there were 7 existing pump-out wells and 16 existing monitoring wells. Pursuant to the Work Plan, 38 additional monitoring wells are being installed.

Page 22, Section VI.5, third bullet: We suggest it would be appropriate to delete the sentence stating that vapor intrusion assessment activities should evaluate whether pump-out and treatment system or other actions will enhance existing vapor mitigation activities. This sentence should deleted because the draft FYR itself states several times that its scope does not include a review or evaluation of the vapor intrusion issue. This sentence is inconsistent with that principle. Second, as mentioned, the RAP Modification #1 provides for a Feasibility Study to identify and evaluate potential remedial actions, determined to be necessary, if any, to address the potential vapor pathway.

Section VII Technical Assessment

Page 24, Section VII.1.4, second paragraph, last sentence: The statement recommending vertical characterization of the deeper (greater than 15 ft bgs) soil and groundwater fails to take into account the on-site Disposal Area Investigation conducted in April 2014,[4] which included four borings advanced to refusal or the uppermost confining layer. Soil and groundwater samples were taken at depths based on field screening measurements and at the top of the confining layer. Low concentrations (near laboratory reporting limits) of TCE were measured in soil samples collected from the top of the confining clay till layer in the four boring locations. TCE was detected at less than 1 mg/kg in the soil sample collected directly above the Decorah Shale in boring DP-056. No TCE was detected above the laboratory reporting limit in the soil samples collected from boring DP-054. Groundwater samples were collected at just above the clay till layer at approximately 40 feet bgs from each general location, and at boring DP-054 between 28-30 feet bgs and at boring DP-056 at 52.5 feet bgs. TCE concentrations from below the water table ranged from 99.5 to 425 ug/L. Additional on-site boring data has been obtained as part of the Work Plan implementation. Sampling from 12 boring locations on-Site showed levels of TCE below the water table ranging from below laboratory reporting limits (less than 0.40 ug/L) to 629 ug/L. This data confirms that the property at 2010 East Hennepin is not a continuing source of TCE in shallow groundwater in the vicinity of the Site, as acknowledged on page 4 of the draft FYR.

Page 25, Section VII.2.1, last paragraph: Close the quotation after "To Be Considered."

[4] These results are documented in the Disposal Area Investigation Results, Barr Engineering Co., May 23, 2014.

Page 27, Section VII.2.5, the second paragraph: The statement that "many homes …are affected by vapor intrusion…." is incorrect and unsupported by Site data. Although it is accurate to say the *potential* for vapor intrusion in the East Hennepin area exists, the data does not support a statement that many homes are affected by vapor intrusion into indoor air. In fact, of the numerous indoor air samples taken to date, only one property has had a pre-mitigation sampling result above the ISV for TCE where the multiple lines of evidence did not point clearly to other sources. Even that home had evidence of numerous potential indoor air sources (e.g., hundreds of containers with household and laboratory chemicals).

Page 27, Section VII.2.5, third paragraph: Insert "source" after the word, "potential" in the third from last line.

Page 28, Section VII.2.5 Table 4: It is inaccurate to characterize the "new" Target Levels in this table as "cleanup levels" based on toxicity value. For air, EPA, MPCA and MDH refer to those levels as "screening levels."

In summary, for the FYR to be as complete and accurate as possible in its review of the remedy, we believe these issues warrant careful consideration. Again, thank you for the opportunity to provide these comments.

Larry Deeney
Senior Technical Leader
Global Safety & Environment

Cc: Hans Neve, MPCA
Tim Grape, MPCA
Mary Sands, Barr

Brenda Winkler

From: Scheer, Dave (MPCA) <dave.scheer@state.mn.us>
Sent: Friday, December 19, 2014 11:02 AM
To: Brenda Winkler
Subject: FW: Comments to draft Five Year Review

From: Scheer, Dave (MPCA)
Sent: Tuesday, December 16, 2014 1:34 PM
To: 'Larry Deeney'
Subject: RE: Comments to draft Five Year Review

Larry;

Thank you for providing comment to the draft Five Year Review. We will give careful consideration to each of your comments before the document is finalized.

Happy Holidays,

David Scheer P.G.

Senior Hydrogeologist

Remediation Division

Minnesota Pollution Control Agency

520 Lafayette Road

St. Paul, MN 55110

(w) 651.757.2693

(F) 651.296.9707

Appendix D

List of Documents Reviewed and Referenced

Documents Reviewed

Barr, 2001. *Shallow Soil Investigation Around the Former Disposal Site, East Hennepin Avenue Site*. August 30, 2001.

Barr, 2010. *2009 Annual Monitoring Report*. March.

Barr, 2010. *Proposed Groundwater Pump Out System Shut Down and Monitoring Plan.* August 2.

Barr, 2011. *2010 Annual Monitoring Report.* February 28.

Barr, 2012*. Groundwater Pump-out System Shutdown Summary Report And 2011 Annual Report*. March.

Barr, 2013a. *2012 Annual Monitoring Report*, February.

Barr, 2013b. *2012 Receptor Well Survey*, February 11.

Barr, 2013c. *Monitoring Well Sealing Report*. August 8.

Barr, 2014a. *2013 Annual Monitoring Report.* February 28.

Barr, 2014b. Disposal Area Investigation Results, May 23.

Barr, 2014c. *Draft Vapor Intrusion Pathway Investigation and Feasibility Study Work Plan Sampling and Monitoring Work Plan*, June.

MPCA, 1984. *Response Order by Consent between General Mills, Inc. and the Minnesota Pollution Control Agency*. October 23.

MPCA, 1994. *Second Five-Year Review*. September.

MPCA. Various years. Site Status Reports published August 12, 2009; February 28, 2011; September 16, 2013; and October 31, 2013.

MPCA, 2001. *No Further Action Approval Letter for Shallow Soil Investigation Around the Former Disposal Site.* September 28.

MPCA, 1999. *Third Five-Year Review Report. General Mills/Henkel Corporation Superfund Site*. September.

MPCA, 2004a. *Declaration of Restrictions and Covenants and Affidavit Concerning Real Property Contaminated with Hazardous Substances.*

MPCA, 2004b. *Draft Fourth Five-Year Review Report. General Mills/Henkel Corporation Superfund Site*. September.

MPCA, 2014a. *Exhibit B RAP Modification #1 of the October 23, 1984 Response Order by Consent between General Mills, Inc. and the Minnesota Pollution Control Agency*. March 11.

MPCA, 2014b. Letter to Ms. Wendy Menken, Southeast Como Improvement Association. June 26.

USEPA, 2001a. Addendum to Five-Year Review Report, General Mills/Henkel Corporation, Five-Year Report dated September 23, 1999, October 23

USEPA, 2007. *Sites in Reuse Fact Sheet, General Mills/Henkel Corporation Superfund Site*. August.

USEPA, 2013. *USEPA Region 5 Fact Sheet for General Mills/Henkel Corporation.* December.

Additional Documents Referenced

Barr Engineering Company (Barr), 1983. June 1983 Site Characterization Study and Remedial Action Plan, General Mills Solvent Disposal Site.

MPCA, 2010. Request for Surface Water Toxics Impact Assessment for the General Mills Superfund Site, August 27.

U.S. Environmental Protection Agency (USEPA), 1985. *Chemical, Physical, and Biological Properties of Compounds Present at Hazardous Waste Sites.* Prepared by Clement Associates for Office of Waste Program Enforcement. Washington, DC.

USEPA, 2001b. *Trichloroethylene (Draft) Office of Research and Development, National Center for Environmental Assessment,* Washington Office, Washington DC, EPA/600/P-01/002A, 2001.

USEPA, 2004. *EPA WasteLAN Database*.

USEPA, 2011. *Integrated Risk Information System (IRIS) Trichloroethylene. (CASRN 79-01-6). http://www.epa.gov/iris/subst/0199.htm*, Washington DC

Appendix E

Site Inspection Report

Site Inspection Report Form

Site Inspection Sign in Sheet

Site Inspection Well Inventory Table

Site Inspection Checklist

I. SITE INFORMATION	
Site name: General Mills/Henkel Corporation Site	**Date of inspection:** May 1, 2014
Location and Region: Minneapolis, Minnesota, Region 5	**EPA ID:** MND051441731
Agency, office, or company leading the five-year review: MPCA	**Weather/temperature:** Overcast, light rain, 45 degrees.

Remedy Includes: (Check all that apply)

☐ Landfill cover/containment
☐ Access controls
☒ Institutional controls
☐ Groundwater pump and treatment
☐ Surface water collection and treatment
☐ Monitored natural attenuation
☐ Groundwater containment
☐ Vertical barrier walls
☒ Other The groundwater pump and treatment remedy was discontinued in 2010 as the plume was stable/decreasing and concentrations were declining. In accordance with an MPCA approved plan, General Mills is performing periodic (every 5 years) groundwater monitoring to confirm stable/decreasing plume. However, the remedy is currently under examination due to Vapor Intrusion (VI) issues that came to light since the last five-year review. Figure 1 outlines the General Mills site and presents locations of existing monitoring wells. Figures 2 and 3 include photographs of each well and Figure 4 presents site features noted in this site inspection report, including the stripper tower used to treat contaminated groundwater. Note that only those sections of the Site Inspection Checklist pertinent to this five year review were retained.

Attachments: ☒ Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Sara Ramsden, Environmental Engineer, Barr Engineering, 5/1/14
   Name Title Date
   Interviewed ☒ at site ☐ at office ☐ by phone Phone no. 612.306.0949
   Problems, suggestions; ☐ Report attached _____
   Sara is the Project Manager for the periodic groundwater monitoring and ongoing VI investigation and participated in the Site Inspection; Sara was not specifically interviewed for this five year review. Please see attached interview documentation form and individual interview records.

2. **O&M staff** _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.)

Please see attached interview documentation form and individual interview records.

4. **Other interviews** (optional) ☒ Report attached.

Please see attached interview documentation form and individual interview records.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - O&M manual ☐ Readily available ☐ Up to date ☒ N/A
   - As-built drawings ☐ Readily available ☐ Up to date ☒ N/A
   - Maintenance logs ☐ Readily available ☐ Up to date ☒ N/A

   Remarks_____

2. **Site-Specific Health and Safety Plan** ☐ Readily available ☐ Up to date ☒ N/A
   - Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☒ N/A

   Remarks_____

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A

   Remarks_____

4. **Permits and Service Agreements**
   - Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A
   - Effluent discharge ☐ Readily available ☐ Up to date ☒ N/A
   - Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A
   - Other permits_____ ☐ Readily available ☐ Up to date ☒ N/A

   Remarks_____

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A

   Remarks_____

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☒ N/A

   Remarks_____

7. **Groundwater Monitoring Records** ☐ Readily available ☐ Up to date ☒ N/A

   Remarks_____

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A

   Remarks_____

9. **Discharge Compliance Records**
   - Air ☐ Readily available ☐ Up to date ☒ N/A
   - Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A

   Remarks_____

10. **Daily Access/Security Logs** ☐ Readily available ☐ Up to date ☒ N/A

    Remarks_____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house ☒ Contractor for PRP
☒ Federal Facility in-house ☐ Contractor for Federal Facility
☒ Other No O&M Costs evaluated as work is being performed by the contractor for the PRP

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☐ N/A

Remarks: A fence surrounds the Site. There are gates at the two entrance points (one gate not serviceable), and one entrance is not gated. A fence surrounds the groundwater treatment with rows of barbed wire strung along the top of the fence. The barbed wire is sagging in places. See Figures 2, 3, and 4 for features noted in the site inspection.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks: The building has a security system. According to Larry Deeney, General Mills, the treatment building security system remains functional. Larry agreed to provide details on what would trigger an alarm since the treatment system is currently shut down.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) unknown
Frequency unknown
Responsible party/agency General Mills; MDH
Contact: Larry Deeney, General Mills Senior Technical Leader, 5/1/14, 763.764.3476
Rita Messing, Minnesota Department of Health, 5/15/2014, 651.201.4916

Name	Title	Date	Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☒ No ☐ N/A
Other problems or suggestions: ☐ Report attached

ICs are in place that restrict disturbance of soils below 4 ft in the vicinity of the former adsorption pit and installation of groundwater drinking water wells in the affected aquifers. There was no evidence that the soils were disturbed in the vicinity of the groundwater treatment system during the site inspection. MDH monitors well construction institutional controls and they have been requested to provide information on how they monitor compliance with the institutional controls/special well construction area for the General Mills site.

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident
Remarks No vandalism is evident. However, access to the site is not restricted. There are holes in the fence and as shown in Figure 4 it appears that there is uncontrolled disposal and storage of miscellaneous materials on the south and west side of the property.

2. **Land use changes on site** ☒ N/A
Remarks No land use changes since last five year review

3. **Land use changes off site** ☒ N/A
Remarks A community garden has been placed across the street from the treatment building, along the green space between the street and the railroad tracks. The location is shown on Figure 4.

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☐ Roads adequate ☒ N/A
Remarks Roads, parking areas are generally asphalt and dirt in various stages of decay.

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

C. Treatment System ☐ Applicable ☒ N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks
The groundwater pump and treat system was shut down in 2010 but still remains in place. In the event that the treatment system is brought back online it will need a complete systems evaluation at that time. If it is determined that it is no longer necessary, abandonment of the extraction wells and removal of the treatment system is recommended. This should be evaluated again in the next five year event.

2. **Electrical Enclosures and Panels** (properly rated and functional)
☒ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____

3. **Tanks, Vaults, Storage Vessels**
☒ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____

4. **Discharge Structure and Appurtenances**
☒ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____

5. **Treatment Building(s)**
☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☒ Needs Maintenance ☐ N/A
Remarks All existing pump out and monitoring wells were located and photographed. Representative photographs are included in Figures 2 and 3. A well inventory sheet is attached. The well inventory sheet identifies the wells that require maintenance.

D. Monitoring Data

1. Monitoring Data
☒ Is routinely submitted on time ☒ Is of acceptable quality

2. Monitoring data suggests:
☒ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☒ Needs Maintenance ☐ N/A
Remarks See comments under treatment above.

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

A. Vapor Mitigation

In order to address VI concerns the Consent Order was amended on March 11, 2014, "RAP Modification #1" to:

> " affirm the investigative and interim actions that have been performed to date and to further address the potential vapor intrusion risks associated with VOC contamination from the Site; to conduct additional sampling and monitoring of soil, soil gas, and groundwater to collect data necessary to identify and evaluate response action alternatives as may be necessary to mitigate the vapor intrusion pathway and reduce VOC concentrations in soil, soil gas, and groundwater."

VI investigations and mitigation activities are currently taking place. The next five year review will evaluate the VI activities.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The groundwater remedy was designed to contain the contaminant plume. The pump and treat system was shut down in 2010. Periodic groundwater monitoring indicates the groundwater plume remains stable/receding and contaminant concentrations are declining. ICs are in place that restrict disturbance of soils below 4 ft in the vicinity of the former adsorption pit and installation of groundwater drinking water wells in the affected aquifers. Therefore, the groundwater remedy is effective and functioning as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The groundwater LTM program calls for sampling of existing monitoring well network every five years as approved by the MPCA. In light of the VI issues adequacy of the 5 year sampling frequency is being examined by General Mills and the MPCA.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

As noted in the monitoring well inventory form, several wells require maintenance. These wells are only inspected during the groundwater monitoring event (currently every five years). Annual well inspection and repair, as necessary, is recommended.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Annual well inspection and repair, as necessary, is recommended. VI assessment should evaluate whether pump and treat system will enhance existing vapor mitigation activities.

Bay West
Customer-Focused Environmental & Industrial Solutions

Employee/Subcontractor/Visitor Register

Project Name	General Mills 5YR Review	Date	05/01/2014
Project Number	J140141	Location	Minneapolis, MN

Your signature below indicates that you were present, coherent, and responsive during the meeting, that you're aware of site hazards, and agree to stop work when an uncontrolled hazard presents itself.

Site Entry/Exit		Name (Printed)	Signature	Company
Time-in	Time-out			
9:00		Brenda Winkler	Brenda Winkler	Bay West
9:00		Shawn Lyman	Shawn Lyman	Bay West
9:00		Tim Grogg	Tim Grogg	Bay West
9:40		Ricardo Mcburley		SECIA
9:00		Larry Deeney		General Mills
9:06		Leah Evison	Leah Evison	US EPA
9:00		Jim Amos	Jim Amos	Matcom
9:00		Fred Campbell	Fred Campbell	MPCA
9:00		MARK MATTSON		MATCOM
9:00		Sara Ramsden	Sara Ramsden	Barr Engineering

General Mills/Henkel Site Inspection / Well Inventory May 1, 2014		
Well ID	**Geologic Unit**	**Comments**
B	Glacial Drift	No well plug, tubing in well, no bollards, surrounded by fencing.
Q	Glacial Drift	No well plug, tubing in well.
S	Glacial Drift	
T2	Glacial Drift	Well is labeled T in photograph. According to Barr, this well is identified as T. The original T monitoring well was abandoned and replaced shortly after installation.
V	Glacial Drift	
W	Glacial Drift	
X	Glacial Drift	No well plug, tubing in well.
2	Glacial Drift	No inner PVC casing, only 4" steel casing, no bollards. This well is not on the proposed sampling list for future groundwater monitoring.
109*	Glacial Drift	Animal nest inside well w/ electrical wiring. Large diameter 8-10" steel casing, no inner PVC. Electrical box attached to outside of well casing at ground surface. No bollards.
110*	Glacial Drift	Electrical box attached to outside of well casing (8-10" steel). Did not open well due to electrical components and cap is bolted on. No bollards.
111*	Glacial Drift	Electrical box attached to outside of well casing (8-10" steel). Did not open well due to electrical components and cap is bolted on. No bollards.
112*	Glacial Drift	Electrical box attached to outside of well casing (8-10" steel). Did not open well due to electrical components and cap is bolted on. No bollards.
113*	Glacial Drift	Locking Plate broken off from well cap so lock is not securing opening of well. Electrical box attached to outside of well casing (8-10" steel). Did not open well due to electrical components and cap is bolted on. No bollards.
14	Magnolia	Well pad is raised in the air likely from frost heave. No well plug.
QQ	Magnolia	No well plug, tubing in well, ~1 ½" PVC well casing, no bollards, very close to ground surface.
TT	Magnolia	Bent well casing, no well plug, no bollards.
VV	Magnolia	No well plug, no bollards.
MG-1*	Magnolia	8-10" steel well casing. Bollard with electrical box appears to have been backed into and bollard is bent.
MG-2*	Magnolia	8-10" steel well casing. Bollard with electrical box appears to have been backed into and bollard is bent.
200	St. Peter	8-10" steel casing, has pump housing and electrical plug inside well. No bollards.
201	St. Peter	No bollards; inner 4" steel well casing.
202	St. Peter	No bollards; pump housing inside well casing.
203	St. Peter	No bollards, in park, pump housing with ~ 1" galvanized steel piping; electrical plug.

*Pump-out well

Appendix F

Interview Record

Interview Documentation Form
Mark Matasovsky Interview Record
Larry Deeney Interview Record
Ricardo McCurley Interview Record
Rita Messing Interview Record

INTERVIEW DOCUMENTATION FORM			
The following is a list of individual interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews.			
Name	**Title/Position**	**Organization**	**Date**
Mark Matasovsky	President	MATCOM	5/01/2014
Larry Deeney	Senior Technical Leader – Global Environment	General Mills	5/01/2014
Ricardo McCurley	Executive Director	SECIA	5/01/2014
SECIA Members	Various	SECIA	5/01/2014 See Response to Community Notification
Rita Messing	Supervisor	MDH	5/15/14
Dan Huff	Director	Minneapolis Department of Health	Contacted 5/15/2014 No Response Received
Mike Convery	Supervisor Central Office Operations Unit	MDH	Contacted 5/15/2014 and 5/22/2014 No Response Received

INTERVIEW RECORD-LAND OWNER AND NEIGHBORS	
Site Name: General Mills//Henkel Corporation Site	Site ID Number: MND051441731
Subject: 2014 Five-Year Review	Date: 5/1/2014
Type: Telephone (Visit) E-Mail Other	Incoming Outgoing
Contact Made By:	
Name: Shawn Lyman	Organization: Bay West LLC
Title: Staff Professional/Geologist	
Individual Contacted:	
Name: Mark Matasovsky	Organization: MATCOM
Title: President	
Telephone Number: 612.788.1401 E-Mail Address: mark@matcominc.com	Street Address: 2200 Johnson Street NE City, State, Zip: Minneapolis, MN 55418

Summary of Conversation

1. What is your overall impression of the project? (general sentiment)

   - Positive. The work of the project has been thorough; General Mills has been upfront and out there leading the way. General Mills has been very supportive w/ tenants and provided several optional meetings at various times for Q and A.

2. What effects have site operations had on the surrounding community?

   - Minimal. Mark observed the treatment tower when he purchased nearby property but didn't know what it was or what was being done.

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details?

   - Mark mentioned the hardest part is the misinformation provided by the press (specifically the newspaper) and the perception it leaves the general public. For instance, the surrounding community is worried about the perception of groceries or food products made here; customers don't want to buy because they heard the area is contaminated. The surrounding community thinks site operations are going well and things are safe, but worried about the press innuendo and the perception it leaves for the community.
   - Mark stated there is a need for improved public information and relations. He believes there is a need for a third-party regulator that can present the information well, but thus far the government agencies (MPCA and MDH) have not presented the issue well and are not great at public speaking.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.

   - No

5. Do you feel well informed about the site's activities and progress?

    - Yes, to the groundwater operations. Mark was informed of the issue and that things were cleaning up. In regards to the vapor intrusion, he didn't feel as informed. Mark went on to say that work was being done in regards to the vapor intrusion but it took a while for the communication to pass down. He didn't find out about the vapor issues until he went to the MPCA for some meetings regarding property agreements.

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

    - Improved information and communication to general public and neighborhood.

7. Do you have any other concerns or comments about the site?

    - No

INTERVIEW RECORD-LAND OWNER AND NEIGHBORS	
Site Name: General Mills//Henkel Corporation Site	Site ID Number: MND051441731
Subject: 2014 Five-Year Review	Date: 5/1/2014
Type: Telephone (Visit) E-Mail Other	Incoming Outgoing
Contact Made By:	
Name: Shawn Lyman	Organization: Bay West LLC
Title: Staff Professional/Geologist	
Individual Contacted:	
Name: Larry Deeney	Organization: General Mills
Title: Senior Technical Leader – Global Environment	
Telephone Number: 763.764.3476 E-Mail Address: Larry.Deeney@genmills.com	Street Address: 1 General Mills Blvd City, State, Zip: Minneapolis, MN 55426

Summary of Conversation

1. What is your overall impression of the project? (general sentiment)
   - Historically, project has gone very well. The project reduced contamination in groundwater to a point to move towards closure.
   - Recently, Vapor Intrusion (VI) is taking on a life of its own. Technically, response has been pro-active, rapid, and protective.

2. What effects have site operations had on the surrounding community?
   - Historically, site operations have had very little impact on surrounding community. The work consisted of basically sampling wells with very little disturbance to the surrounding community.
   - Recently, with VI, work has been more visible/impactful as General Mills is working to ensure to reduce risk to potential exposure.

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details?
   - Historically, no. No concerns among community regarding operations at site; everything was moving smoothly.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
   - No

5. Do you feel well informed about the site's activities and progress?
   - Yes, very well informed.

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

- No, I believe under MPCA oversight General Mills has been working hard to move towards closure.

7. Do you have any other concerns or comments about the site?
   - No

INTERVIEW RECORD-LAND OWNER AND NEIGHBORS	
Site Name: General Mills//Henkel Corporation Site	Site ID Number: MND051441731
Subject: 2014 Five-Year Review	Date: May 1, 2014
Type: Telephone **Visit** E-Mail Other	Incoming Outgoing
Contact Made By:	
Name: Brenda Winkler	Organization: Bay West LLC
Title: Senior Project Manager	
Individual Contacted:	
Name: Ricardo McCurley	Organization: SECIA
Title: Executive Director	Since 2012
Telephone Number: 6112.676.1731 E-Mail Address: Ricardo@comogreenvillage.info	Street Address: 1170 15th Avenue SE #302 City, State, Zip: Minneapolis, MN 55414

Summary of Conversation

1. What is your overall impression of the project? (general sentiment)
   - Pre-Vapor Intrusion (VI; November 2013) - I have no impression. The only knowledge was a vapor tower that was pointed out when I was given a tour of the neighborhood. There was no communication that Ricardo was aware of. The community was not aware that the groundwater extraction system was shut down.
   - Post- VI – for Groundwater – In 1985 Ricardo thinks that this site have been no big deal. But reflecting back and after knowing that there was a 2004 & 2009 Five Year Review he has wondered:
     - Why were the groundwater quality levels not revisited and updated to the current standards? They seem high.
     - Why was groundwater pumped from selected wells are discharged to the storm sewer without treatment? The system was installed to protect the river and water was discharged directly to the storm sewer thereby reaching the river faster. Because of this, Ricardo is ok that pumping has stopped.
   - Post- VI – for VI – Ricardo is encouraged that the groundwater values are being reexamined for the VI evaluation. Correlation between GW/VI is of a great interest to the SECIA for this site and for other future sites of this nature. It will provide answers on how can the process can be improved upon.
2. What effects have site operations had on the surrounding community?
   - Pre VI-none
   - Post VI-# trucks, residents are inconvenienced by work. Work is disconcerting and invasive on various levels. Ricardo acknowledged contractors are working on minimizing their

invasiveness and it is appreciated by the community. SECIA has to respond to more inquires. SECIA is currently tracking the number of hours spent on this Site. Ricardo alone has spent >300 hours.

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details?
   - Communication with the MPCA has been a concern but it is getting better. They speak a lot but don't respond to the question. The community would prefer an honest answer "we don't know" or "I don't have an answer to that question". Instead they are non-committal. The community would appreciate knowing the MPCA does not have an answer instead of non-communication. It's ok to say "I don't know".
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
   - No
5. Do you feel well informed about the site's activities and progress?
   - Pre VI- No
   - Post VI-For the most part.
6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
   - Communication –See #3. Ricardo would like to see more transparency in the process. Hundreds of people have been brought into the process and need to be educated on why things are done a certain way. For example: Why is General Mills developing the plan and not the MPCA? Why does it take so long? People are feeling they don't understand and it is being inclusive. The community would like to be included in the process.
7. Do you have any other concerns or comments about the site?
   - No

INTERVIEW RECORD-STATE AND LOCAL UNIT OF GOVERMENT	
Site Name: General Mills//Henkel Corporation Site	Site ID Number: MND051441731
Subject: 2014 Five-Year Review	Date: 5/15/2014
Type: Telephone Visit x**E-Mail** Other	Incoming Outgoing
Contact Made By:	
Name: Shawn Lyman	Organization: Bay West LLC
Title: Staff Professional/Geologist	
Individual Contacted:	
Name: Rita Messing	Organization: Minnesota Department of Health
Title: Supervisor –Site Assessment and Consultation	
Telephone Number: 651-201-4916 E-Mail Address: rita.messing@state.mn.us	Street Address: 625 North Robert Street P.O. Box 64975 City, State, Zip: St. Paul, MN 55164

Summary of Conversation

1. What is your overall impression of the project? (general sentiment)

    - The site work has been handled conscientiously by the MPCA and EPA and General Mills.

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

    - Minnesota Department of Health has had little involvement with the site apart from 5 year reviews since our last health assessment document in 1995, prior to the determination of a possible vapor intrusion problem.

3. Have there been any complaints, violations, or other incidents related to the site requiring response by your force? If so please give details of the events and the results of the responses?

    - No. Since the discovery of the vapor intrusion problem, MDH has been involved with communications to residents, the University of Minnesota and the City of Minneapolis.

4. Do you feel well informed about the site's activities and progress?

    - Since the discovery of a probable vapor intrusion problem subsequent to vapor sampling in public rights of way in the area, communication has been very good. Prior to that, there has

not appeared to be much need for communications as MPCA and General Mills appeared to be managing the site appropriately.

5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

    - The MPCA is working with General Mills to investigate remedial alternatives for the groundwater plume. Further investigation is needed to delimit the boundaries of vapor intrusion into buildings and the possible existence of other groundwater volatile organic chemical plumes in the area.

6. Do you have any other concerns or comments about the site?

    - No.